

DTC-77ES/87ES

SERVICE MANUAL

US Model

DTC-87ES

AEP Model

UK Model

DTC-77ES



Photo: DTC-87ES

Model Name Using Similar Mechanism	New Mechanism
Tape Transport Mechanism Type	DATM-51

SPECIFICATIONS

Tape	Digital audio tape
Recording head	Rotary head
Recording time	Standard: 120 minutes. Long-play mode: 240 minutes (with DT-120)
Tape speed	Standard: 8.15 mm/s, Long play mode: 4.075 mm/s
Drum rotation	Standard: 2,000 rpm, Long-play mode: 1,000 rpm
Error correction	Double Read Solomon code

Tape	
Track pitch	13.6 μ m (20.4 μ m)
Sampling frequency	48 kHz, 44.1 kHz, 32 kHz
Modulation system	8-10 Modulation
Transfer rate	2.46 Mbit/sec.
Number of channel	2 channels, stereo
D/A conversion (Quantization)	Standard: 16-bit linear Long-play mode: 12-bit non-linear
Frequency response	Standard: 2-22,000 Hz (± 0.5 dB) Long-play mode: 2-14,500 Hz (± 0.5 dB)

		DTC-77ES	DTC-87ES
Signal to noise ratio	SP	more than 93 dB	more than 94 dB
	LP		more than 93 dB
Dynamic range	SP	more than 93 dB	more than 94 dB
	LP		more than 93 dB
Total harmonic distortion (1 kHz)	SP	less than 0.0045%	less than 0.004%
	LP	less than 0.08%	less than 0.08%

* SP: standard-play mode
LP: Long-play mode

Wow and flutter	Below measurable limit ($\pm 0.001\%$ W. PEAK)
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— Continued on next page —

DIGITAL AUDIO TAPE DECK
SONY®



使用時は添付資料も参照のこと
Refer to the additional documents.

Input

	Jack type	Impedance	Rated input level
LINE IN	phono jack	47 kohms	-4 dBs
DIGITAL IN	phono jack	75 ohms	0.5 Vp-p, 20%
DIGITAL IN	optical jack	—	—

Output

	Jack type	Impedance	Rated output	Load impedance
LINE OUT	phono jack	470 ohms	-4 dBs	More than 10 kohms
PHONES	stereo phone jack	220 ohms	2.0 mW	32 ohms

DIGITAL OUT (optical jack): wavelength 660 nm

General

Power requirements	US model: 120 V AC, 60 Hz AEP model: 220/230 V AC, 50/60 Hz UK model: 240 V AC, 50/60 Hz
Power consumption	37 W
Dimensions	US, AEP model: Approx. 470 × 135 × 350 mm (w/h/d) (18 ⁵ / ₈ × 5 ³ / ₈ × 13 ⁷ / ₈ inches) UK model: Approx. 430 × 135 × 350 mm (w/h/d) (17 × 5 ³ / ₈ × 13 ⁷ / ₈ inches)
Weight	US, AEP model: Approx. 11 kg (24 lb 5 oz) UK model: Approx. 10.2 kg (22 lb 8 oz)

Remote commander (supplied)

Remote control system	Infrared control
Power requirements	3V DC, with two size AA (R6) batteries
Dimensions	Approx. 63x19x175 mm (w/h/d) (2 1/2 × 3/4 × 7 inches)
Weight	Approx. 130 g (4 oz) incl. batteries.

Supplied accessories



Sony batteries SUM-3(NS) (2)
Audio connecting cords (2 phono plugs - 2 phono plugs,
stereo for line inputs and outputs) (2)
Screws (4)

Design and specifications subject to change without notice.

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SAFETY-RELATED COMPONENT WARNING!!

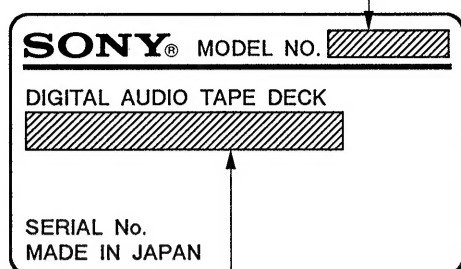
COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MODEL IDENTIFICATION

— Specification Label —

DTC-77ES

DTC-87ES



US Model: AC: 120V 60Hz
 AEP Model: AC: 220 – 230V~50/60 Hz
 UK Model: AC: 240~50/60 Hz

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
 Udskiftning må kun ske med batteri
 af samme fabrikat og type.
 Lever det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri – Eksplosjonsfare.
 Ved utskifting benyttes kun batteri som
 anbefalt av apparatfabrikanten.
 Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
 Använd samma batterityp eller en ekvivalent
 typ som rekommenderas av apparattillverkaren.
 Kassera använt batteri enligt fabrikantens
 instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
 Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
 tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
 mukaisesti.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

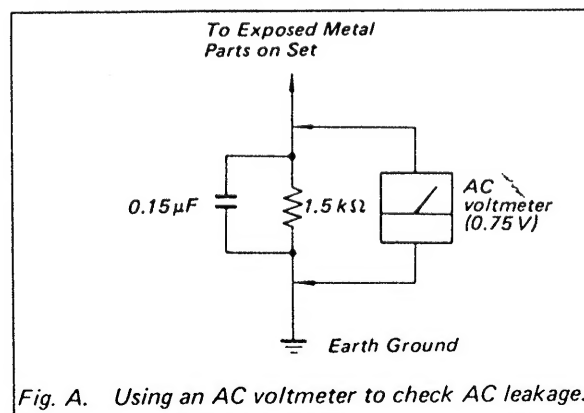


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1 GENERAL

This section is extracted from instruction manual.

Features

Serial copy management system

This unit utilizes the serial copy management system that permits digital-to-digital recording for one generation. You can record CD sound or other digital formats through a digital-to-digital connection.

4-Head, 4-DD Motor Mechanical Deck System

In addition to the standard two heads for recording and playback, this unit employs two additional heads for after-monitoring, forming a four-head system. This system allows after-monitoring of the recorded sound during recording in the same manner as with three-head cassette decks. In addition, the unit employs direct-drive motors for the drum, capstan, and reel drives, realizing silent and stable tape transport.

Date Function Automatically Records the Recording Date and Time

The year, month, day, day of the week, hour, minute and second are automatically recorded in the subcode area during recording, so that during playback you can display this data to check when the tape was recorded. This function is especially convenient when recording live performances, etc.

Three sampling frequencies

Recording/playback can be done with three sampling frequencies (48 kHz, 44.1 kHz and 32 kHz).
48 kHz: For analog and digital input signals in a standard mode.
44.1 kHz: For compact disc and pre-recorded DAT tape.
32 kHz: For analog input signals in a long-play mode.

Long Play mode

This unit can operate in a long-play mode. Analog input signals can be recorded or playback for up to four consecutive hours when the DT-120 DAT cassette tape is used. The sampling frequency will be 32 kHz in the long-play mode.

Visible cassette loading

You can view the tape operation through the lid of the cassette compartment.

Excellent sound quality

1-bit A/D converter

For the A/D converter section which converts analog input signals to digital signals, the unit employs a 1-bit A/D converter which theoretically generates no zero-cross distortion for a clear, elegant sound quality.

Pulse D/A converter

Superior playback performance is achieved through the combination of an 8X oversampling digital filter with a 1-bit D/A converter.

Independent Digital and Analog Power Sources

Since the design of the power source section is important for obtaining good sound quality, this unit incorporates two large-sized, large-capacity transformers for independently supplying power to the digital/mechanical deck sections and the analog section. This design eliminates from the source any interference introduced through the power supply.

Rich Variety of Subcode Information

This unit can record subcode information such as Start IDs, program numbers, Skip IDs, and absolute time data, enabling you to quickly locate tunes and display the playback time in the same manner as when playing compact discs.

High-Speed Search Function

Direct-drive reel motors and a software servo system enable you to locate tunes at high speeds up to 200-times the normal playback speed.

Digital fade-in/fade-out

Professional sounding fade-in/fade-out of either digital or analog signals can be accomplished by use of the FADER button.

Post edit recording of sub codes

You can record or rewrite the following sub codes after the audio signal recording has been completed.

Start ID: Signifies the beginning of a selection.

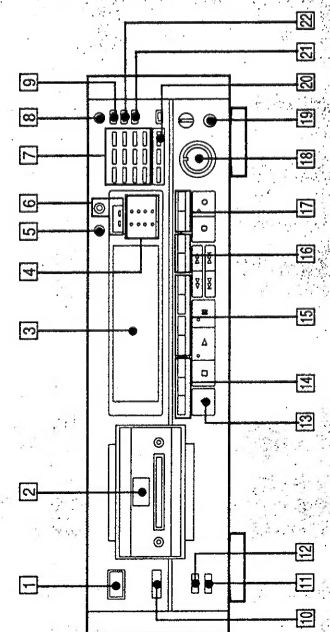
Program number: Gives a number to the selection.

Skip ID: Signifies the beginning of a portion to be skipped.

End ID: Signifies the end position of recording/playback.

Since sub codes are written on the tape separately from audio signals, the audio signals are not affected.

Location and Function of Controls



1 POWER switch

Turns the power on and off.

2 Cassette compartment

Insert a cassette with the window side up and the safety tab facing you.

3 Display window

4 ID indicators

Display which ID button is pressed.

5 REC MODE selector

Normally set to STANDARD.
When this selector is set to LONG, you can record analog input signals or digital signals with 32 kHz in the long-play mode.

6 REC MONITOR switch and indicators

Switch the output signals from the LINE OUT jack, DIGITAL OUT jack and PHONES jack during recording.
In the SOURCE mode, the signal being input is output. In the TAPE mode, the signal to be recorded is output.

7 Music select buttons

Numeric buttons (0-9): Designate the desired program number to be played back before starting playback.
CLEAR: Use to cancel the program number which has been mistakenly entered.
MUSIC SCAN: Use this feature to listen to the beginning of each selection successively.

8 DISPLAY MODE button

Change the display mode. (Refer to page 10.)

9 REPEAT button

Press to play a desired portion repeatedly. Each time you press the button, the indication changes as follows:
REPEAT 1 → REPEAT ALL → Nothing

10 Remote sensor

Receives the signal from the Remote Commander.

11 INPUT selector

Set according to the signal to be recorded.
ANALOG: For recording from the equipment connected to the LINE IN jacks.
OPTICAL: For recording from the equipment connected to the DIGITAL IN (OPTICAL) jack.
COAXIAL: For recording from the equipment connected to the DIGITAL IN (COAXIAL) jack.

12 TIMER switch

Normally set to OFF. Use start recording or playback at the desired time using a commercially available audio timer.

13 OPEN/CLOSE button

Press when inserting or removing the cassette.

14 COUNTER buttons

MODE: Selects the counter display in the display window among the linear counter (tape running time), absolute time, elapsed time of the selection, and total remaining time of tape. Each time you press the button, the display changes sequentially.
RESET: Resets the linear counter to "00:00".
MEMORY: Press to search the position of the tape you want to listen to (Memory play, Memory stop).

15 START ID buttons

AUTO: Press to turn on and off the AUTO indicator. When the AUTO indicator is lit, the start ID will automatically be written during recording. When the AUTO indicator is not lit, press START ID WRITE at the point where you want to write a start ID.
WRITE: Press to write the start ID at the desired point during recording or playback.
ERASE: Press to erase a start ID. When a start ID and a program number are written on the tape, both codes are simultaneously erased by pressing this button.

RENUMBER: Press to renumber all programs on the tape. When only the start IDs are written, pressing this button will insert the proper program numbers beginning with "1". The tape will rewind and start from the beginning to accomplish this function.

16 SKIP ID buttons

WRITE: Press at the beginning of the portion you may wish to skip later. A skip ID will be written from the point where you pressed this button.

ERASE: Press to erase the nearest skip ID which is before the current position.

17 END ID buttons

WRITE: Press to write the ID signifying the end of playback or recording.
ERASE: Press to erase the end ID.

18 REC LEVEL (recording level) controls

Adjust the recording level for the analog input signals. The outer knob controls the L (left) channel level and the inner knob the R (right) channel level. The knobs can be adjusted together.
When recording digital signals, it is not necessary to adjust the recording level.

19 PHONES jack

20 CLOCK SET button

Press to adjust the time of the clock built in this unit. In this mode, the MUSIC SCAN button and the 0 button function as the + and - buttons respectively.

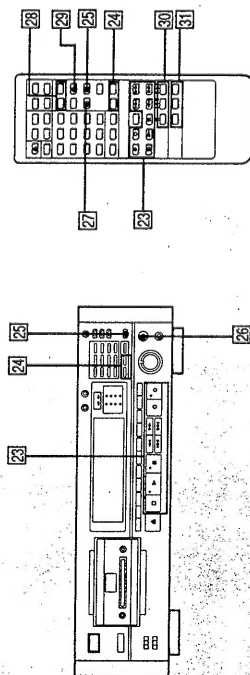
21 FADER button

Press to fade in or fade out during recording or playback.

22 SKIP PLAY button

Press to activate the skip ID code function. The portion of the tape previously marked will be skipped.

Location and Function of Controls



Front Panel/Remote Commander

23 Tape operating buttons

- (stop): Press to stop recording or playback.
- ▶ (play): Press to play back the tape.
- (recording): Press to start recording. After pressing this button, press II or ▶.
- II (pause): Press to stop for a moment during recording or playback. To restart recording or playback, press this button again or press ▶.
- If the unit is left in the pause mode for about 10 minutes, it will automatically be released and the deck will enter the stop mode. To restart recording or playback from the stop mode, press REC or ▶ respectively.
- (record muting): Inserts a sound-muted portion (space).
- ◀▶▶▶ (AMS): Press to locate the beginning of the selection during the playback.
- ◀▶▶▶ (rewind/review, fast-forward/cue): In the stop mode, press to rewind/review, fast-forward the tape. During playback, press to rewind or fast-forward the tape while listening to the sound.

24 DATE button

- RECORDED:** Press to display the recording day of the tape being played.
- PRESENT:** Press to display the current time.
- Each time the RECORDED or PRESENT buttons are pressed, year, month, and day display or hour, minute and second display is switched respectively.

25 MARGIN RESET button

- Press to reset the margin of peak level.

26 PHONE LEVEL control

- The PHONE LEVEL control adjusts the headphones volume level.

27 TIME SEARCH button

- Press to search the position of the tape you want to listen to by giving the time elapsed from the beginning of the tape.

28 RMS play buttons

- ENTER:** To program the selections in a desired order, press this button after pressing the numeric buttons.
- CHECK:** Press to check the programmed contents.

29 REPEAT A-B button

- Press to play back a desired portion repeatedly.

30 CD operation buttons

- Operative only for the Sony CD player equipped with a Remote Commander.
- II (pause):** Sets the CD player in the pause mode during playback. Press again to release pause. If pressed twice when the player is in the stop mode, playback starts.
- ◀▶▶▶ (AMS):** Press to locate the desired selection on the Compact Disc during playback or in the stop mode.

31 CD SYNCHRO (CD synchronized recording) buttons

- (The playback of the CD player equipped with a Remote Commander and the recording of the DAT deck can be performed simultaneously.)
- STANDBY:** Press to set the unit in the record-standby mode.
- START:** Press to start recording of the DAT deck and then playback of the CD player.
- STOP:** Press to stop the DAT deck recording and the CD player playback.

Remote Commander Operation

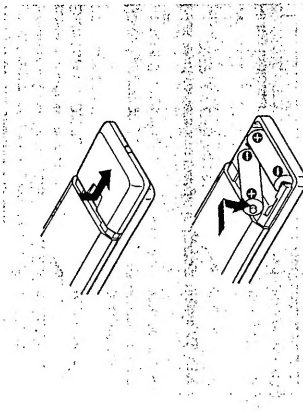
Each button on the Remote Commander functions in the same way as those having the same name on the front panel. However, the following operations cannot be performed using the Remote Commander. Use the front panel controls instead.

- Tuning the power on and off
- Selecting digital/optical/coaxial/analog input source
- Adjust the recording level/headphones level
- Setting the timer recording/playback
- Selecting the record mode (standard or long)
- Setting the REC MONITOR switch.

The following operations can be performed only with the Remote Commander.

- Activating CD synchronized recording using a Sony CD player and controlling the CD player
- Locating the desired selection on the Compact Disc or setting the CD player in the pause mode (possible only when a Sony CD player is used.)
- Repeat play (A-B)
- RMS* play
- *RMS: Random Music Sensor
- Time search (When locating the desired position of the tape by giving the time elapsed from the beginning of the tape.

Installing Batteries



Insert two size AA (R6) batteries with correct polarity and close the lid.

Notes on remote control

- Do not expose the remote sensor on the deck to strong light such as direct sunlight, lighting apparatus, etc.
- Do not place any obstructions between the Remote Commander and the remote sensor, or else operations will not be performed correctly.
- The controllable range is limited. Point the Remote Commander directly at the remote sensor on the deck.
- When remote control operation distance becomes shorter, the batteries are weak. Replace both batteries with new ones.

To avoid battery leakage

When the commander will not be used for a long period of time, remove the batteries to avoid damage caused by battery leakage and corrosion.

Battery life

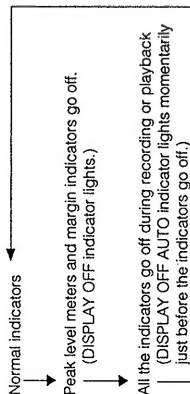
About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries.

Location and Function of Controls

Display Window

To turn off the display window

When the power is turned on, the display window also is turned on. During recording or playback, all display or some parts of the display can be turned off. Each time the DISPLAY MODE button is pressed, the indicators changes as follows:



To change the brightness of the display window

While pressing COUNTER MODE, press one of the numeric buttons 1, 2 and 3. The greater number pressed, the darker the display window becomes. (When operating with the Remote Commander, also press COUNTER MODE.)

1 LONG PLAY mode indicator

Lights when recording or playback is being performed in the long play mode.

2 DATE indicator

Lights when pressing the RECORDED to display, the recording day of the tape being played. Lights off when pressing PRESENT button to display the current time.

3 EMPHASIS indicator

Lights when a tape recorded with emphasis is played back, or when recording from a digital signal on which emphasis is applied. The emphasis function reduces the noise of the high frequency level by boosting the high frequency level during recording (Pre-emphasis function) and by lowering it during playback (De-emphasis function). This unit incorporates only the de-emphasis circuit. You can play or record the emphasized signal but newly applying emphasis cannot be performed.

4 COPY PROHIBIT indicator

Lights when recording the digital signal with the copy prohibit code. In this case, record with the LINE IN jack.

5 TOC (Table of contents) indicator

When a pre-recorded DAT cassette is played back, this indicator will light.

6 SKIP PLAY indicator

When this indicator is lit during playback, the portion marked by the skip ID is skipped and playback continues from the next start ID.

7 SAMPLING FREQ. (Sampling frequency) indicator

48 kHz: For recording/playback of analog input signals (standard mode)
44.1 kHz: For recording/playback of CD and a pre-recorded DAT cassette
32 kHz: For recording/playback of analog input signals (long-play mode)

8 REPEAT indicators

REPEAT 1: Lights when a desired selection is played back repeatedly.

REPEAT ALL: Lights when all the selections are played back repeatedly.

REPEAT A-B: Lights when a desired portion is played back repeatedly.

9 STEP/PGM NO. indicator

Shows the program number of the selection being played. When programming the desired selection in the RMS operation (page 39), the display shows the step number of the programmed selection.

10 AMS (Automatic Music Sensor)/RMS (Random Music Sensor) indicators

Show the number of selections to be skipped ahead or behind in the AMS operation. When designating a selection directly by the numeric button and the ► button, the display shows the program number of the target selection while the selection is being searched for. When programming the desired selections in the RMS operation (page 39), the display shows the program number of the selection to be programmed.

11 CAUTION indicator

Lights when moisture condensation occurs. If this happens, the deck stops functioning automatically. (See page 4.)

12 MUSIC SCAN indicator

Lights after pressing the MUSIC SCAN button to listen to the beginning of each selection successively.

13 FADE IN/OUT indicator

FADE IN: Blinks when recording or playback fades in.
FADE OUT: Blinks when recording of playback fades out.

14 Indicator of the input selector

The OPTICAL or COAXIAL indicator lights according to the position of the INPUT selector. No indicator lights when the INPUT selector is set to ANALOG.

15 SKIP ID indicator

Lights when writing or erasing a skip ID code or when the skip ID is detected during playback.

16 START ID indicator

Blinks when writing (for 9 or 18 seconds) or erasing a start ID code, and lights when the start ID is detected during playback.

17 END ID indicator

Blinks when writing (for 9 or 18 seconds) or erasing an end ID code, and lights when the end ID is detected during playback.

18 TIME SEARCH indicator

Lights when searching the desired position of a tape by giving the time elapsed from the beginning of the tape.

19 REHEARSAL indicator

Lights while the rehearsal function is activated (page 27).

20 MARGIN indicator

Shows how much margin there is between the peak level of input audio signal and 0 dB.

21 Frequency map indicator

Bars indicating the sampling frequencies with which the tape was recorded appear on the peak level meters. (Refer to page 33.)

22 Peak level meters

Indicate the peak value of the audio signal being recorded when the REC MONITOR switch is set to SOURCE or the peak value of the audio signal recorded on the tape when the REC MONITOR switch is set to TAPE.

23 Time indicator

Indicates the tape running time, absolute time, elapsed time of the current selection, remaining time or recording day. Each time the COUNTER TIME button is pressed, the display is changed.

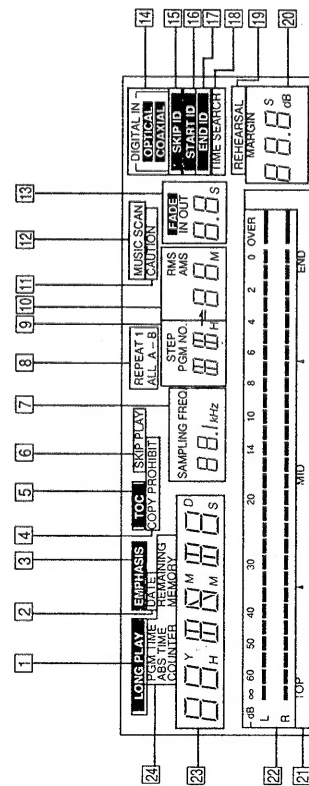
24 REMAINING (remaining time): Lights when the counter shows the remaining time of the tape.

PGM TIME (program time): Lights when the counter shows the elapsed time of the current selection.

ABS TIME (absolute time) indicator: Lights when the counter shows the tape running time from the beginning.

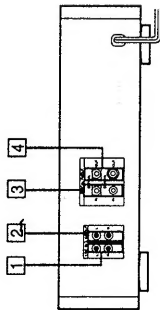
COUNTER indicator: Lights when the counter shows the tape running time.

MEMORY indicator: Lights when the MEMORY function can be performed in the COUNTER mode.



Connections

Rear Panel Jacks



- 1 LINE IN (line input) jacks (phone jack)**
Connect to the recording outputs of an amplifier. Signals supplied by the amplifier can be recorded using the sampling frequency of 48 kHz in the normal play mode or 32 kHz in the long play mode.
- 2 LINE OUT (line output) jacks (phone jack)**
Connect to the DAT or tape inputs of an amplifier. The playback signal of this deck will be output.
- 3 COAXIAL/OPTICAL DIGITAL IN (digital input) jacks (coaxial/phono jack/optical jack)**
Connect to the digital outputs of an amplifier having a built-in D/A converter or other digital source, such as a CD player for digital-to-digital recording.

Connecting Cord
There are following three types of connecting jacks at the rear of the deck. Each type of jack requires a different type of connecting cord.

- 4 COAXIAL OPTICAL DIGITAL OUT (digital output) jack (coaxial/phono jack/optical jack)**
Connect to the digital inputs of an amplifier having a built-in D/A converter or another DAT deck, for playback of a DAT cassette or digital-to-digital recording.

Notes on connection

- Use the connecting cords specified in the illustrations.
- Turn off the power for all equipments before making connections.
- Be sure to insert the plugs firmly into the jacks. Loose connections may cause hum and noise. When unplugging, grasp the plug and not the cord.

Notes on the optical cable

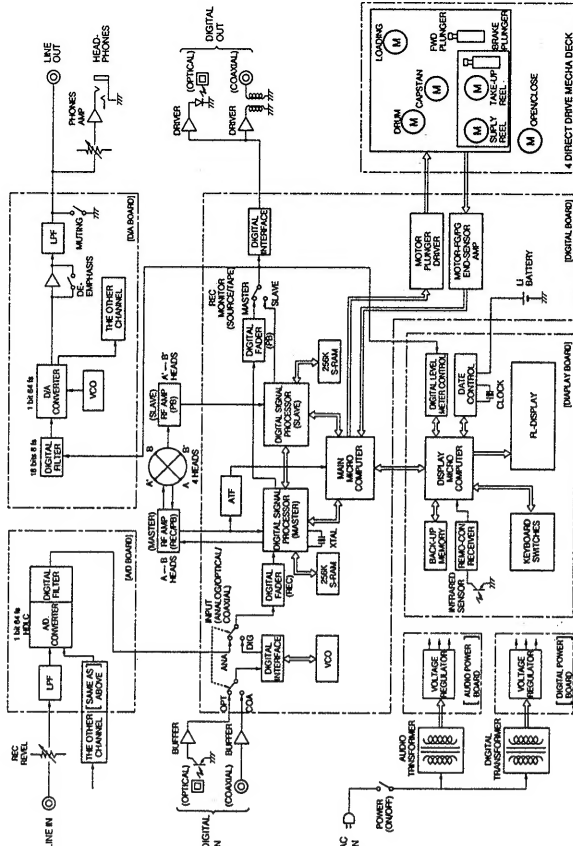
- Do not bend the cord. When the cord is not used, curl it with a diameter of more than 15 cm (5 7/8 inches).
- Do not use it under high temperatures.
- When the optical cable is not connected, cover the OPTICAL IN/OUT jacks with the supplied caps.

Note on sound signals

When connecting an optical cable to the DIGITAL IN/ DIGITAL OUT jacks, sound signals (L/R) are transmitted together through the cable.

LINE IN/OUT (analog input/output) jacks	<p>Audio signal connecting cord (supplied, or optional RK-C505KS etc.)</p> <p>LINE OUT White Left White Right Red Red</p>
COAXIAL IN/OUT (digital input/output) jacks	<p>Coaxial digital connecting cord (optional VMC-1ES etc.)</p> <p>COAXIAL OUT COAXIAL IN</p>
OPTICAL IN/OUT (optical transmission digital input/output) jacks	<p>Optical cable (optional POC-15 etc.)</p> <p>OPTICAL OUT OPTICAL IN</p> <p>How to connect the optical cable</p> <p>Remove the cap. Plug in firmly.</p>

Block Diagram



Time Setting

This unit employs a built-in clock to keep track of the current date and time. Once you set the date and time, this information will be recorded on the tape along with the audio signal during recording. This function is very convenient because it allows you to check when the tape was recorded when playing the tape later.

Setting the date and time

Example: Setting the clock to 10:30:00 AM, July 4, 1991 (Thursday)

Setting the date

1 Display the current date.



2 Set the year.



3 Set the month.



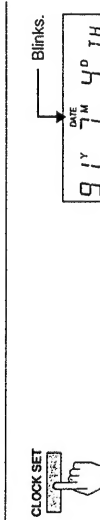
4 Set the day.



5 Set the day of the week.



6 Complete the setting procedure.



Note: In the time setting description, US model is used as an example.
On AEP, UK model 24 hours clock is used.

Time Setting

Setting the time

1 Display the current time.



2 Set the hour.



3 Set the minutes.



4 Set the seconds to 0.



5 Start the clock simultaneously with the signal from a timecast (telephone, etc.).



To confirm the date or time

Press the **PRESENT** button to display the date or time. One press displays the date and two presses displays the time. To return to the original counter display, press the **COUNTER** button.

Time display

The time is displayed in 12-hour format.
Midnight and noon are displayed as follows:
Midnight: AM 12:00
Noon: PM 12:00

Built-in clock

This unit's built-in clock operates using a quartz oscillator, and time variations caused by changes in temperature, etc., may accumulate. For precise recording of hour, minute, and second data by the built-in date function, it is recommended that you set the clock once a week.

Precautions when setting the time

- Set the time while the tape is stopped.
- Although this unit's clock automatically adjusts for leap years and long and short months, do not enter a date which does not exist.

A. The day of the week and AM/PM are displayed as follows.

Sunday	SU	AM
Monday	MO	PM
Tuesday	TU	
Wednesday	WE	
Thursday	TH	
Friday	FR	
Saturday	SA	

Note

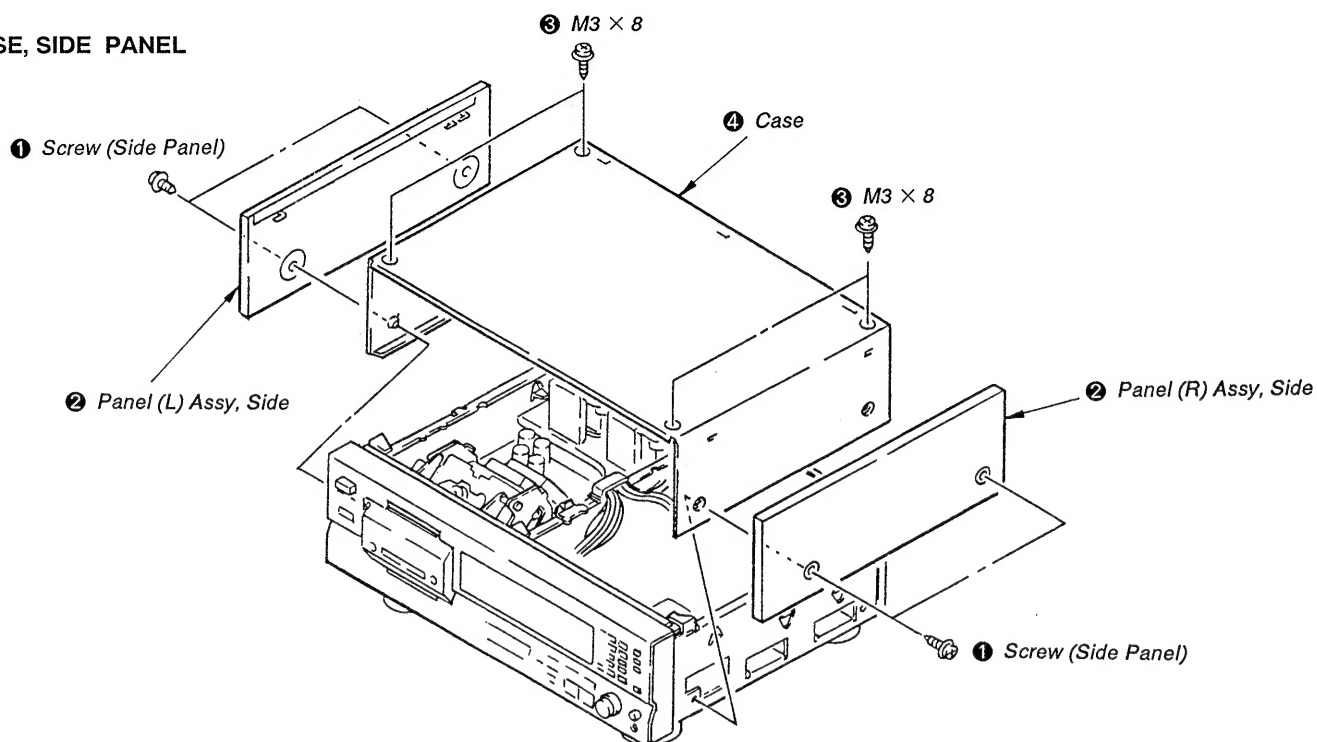
This unit uses a back-up battery to keep the clock running when the power is turned off. The life of the battery under normal use is approximately five years. When the battery starts to run down, the clock will stop operating normally. When this occurs, have the battery replaced at your dealer or nearest Sony Service Center (a battery replacement fee is required).

SECTION 2

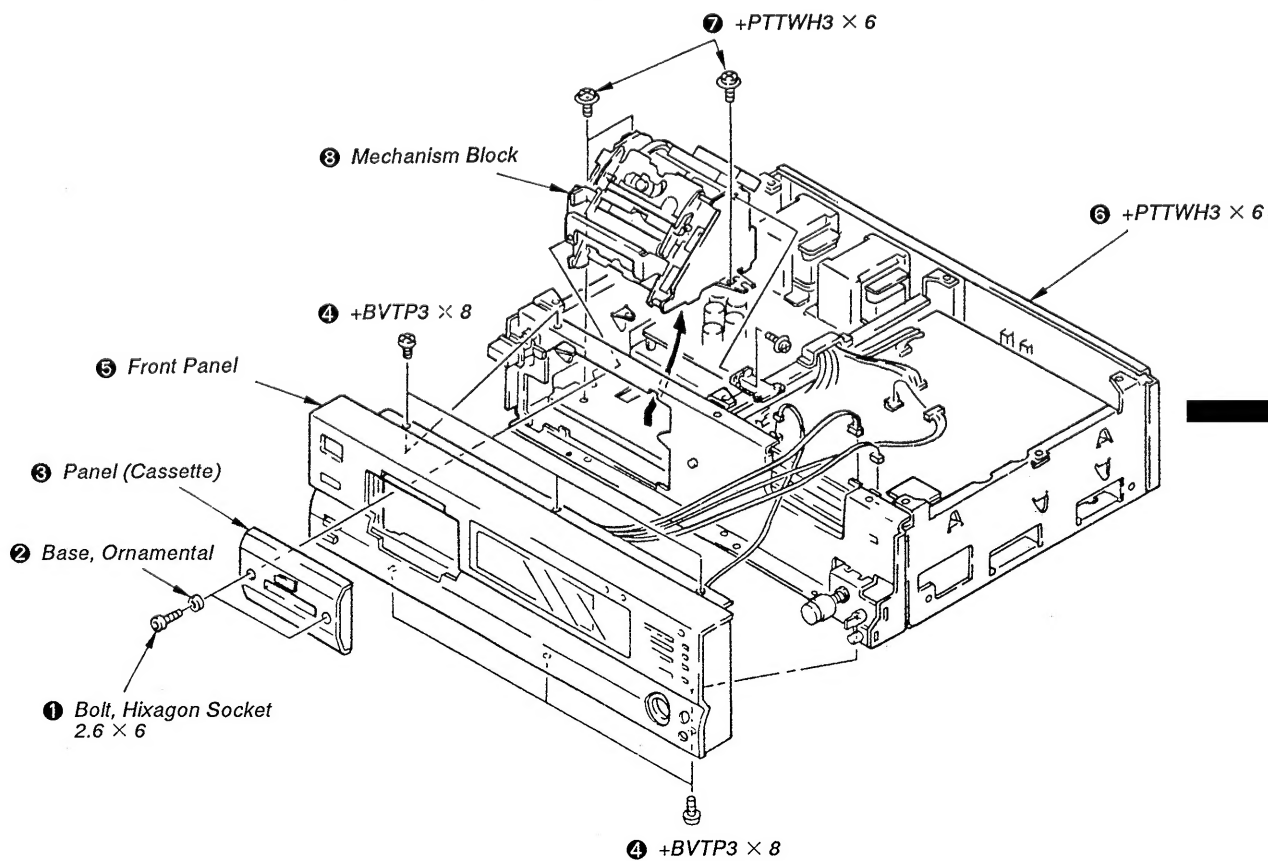
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

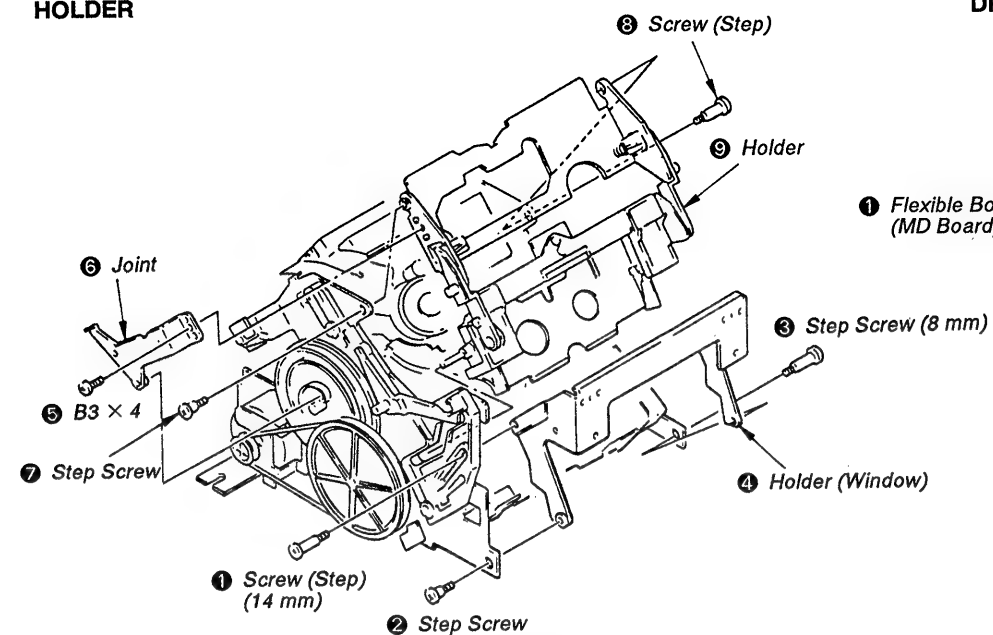
CASE, SIDE PANEL



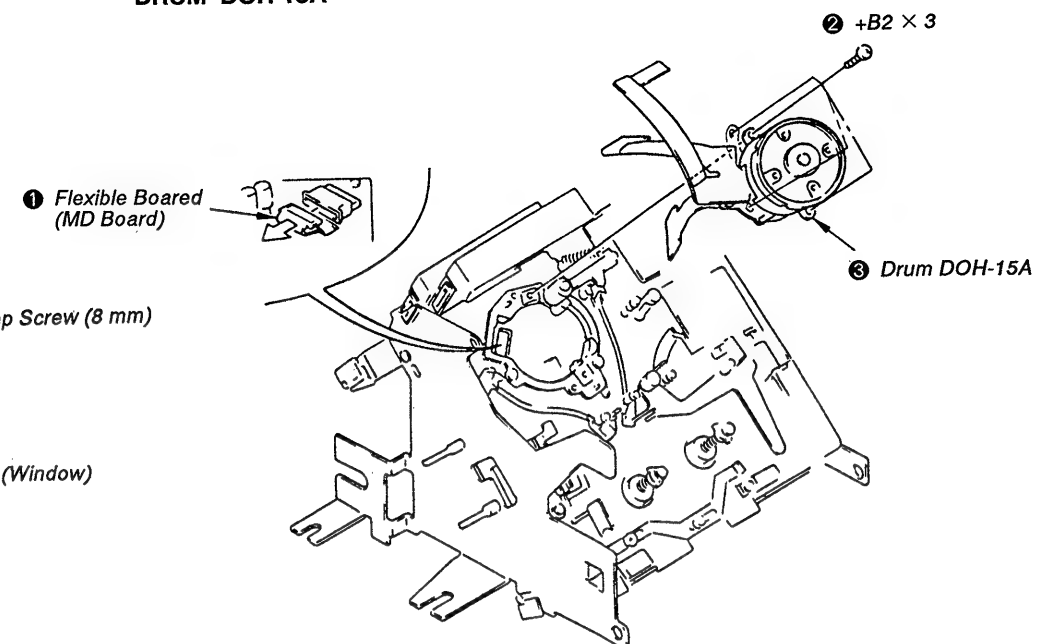
PANEL (CASSETTE), FRONT PANEL, MECHANISM BLOCK



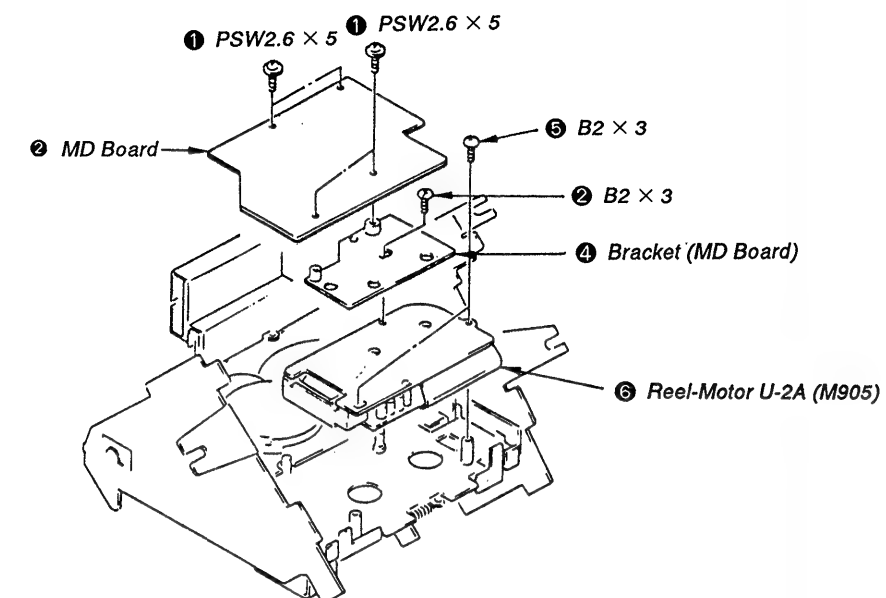
HOLDER



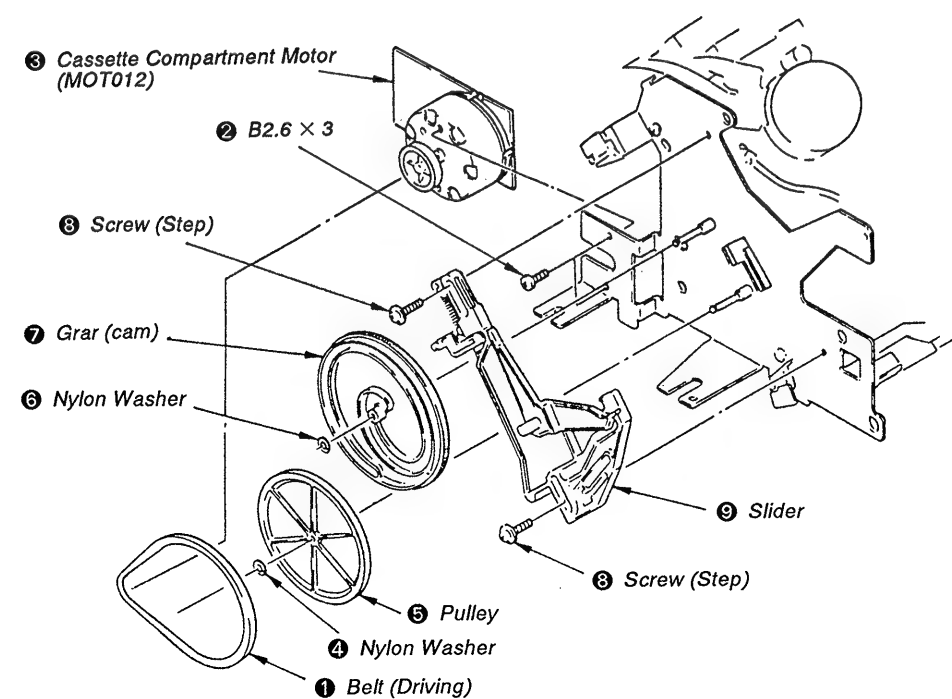
DRUM DOH-15A



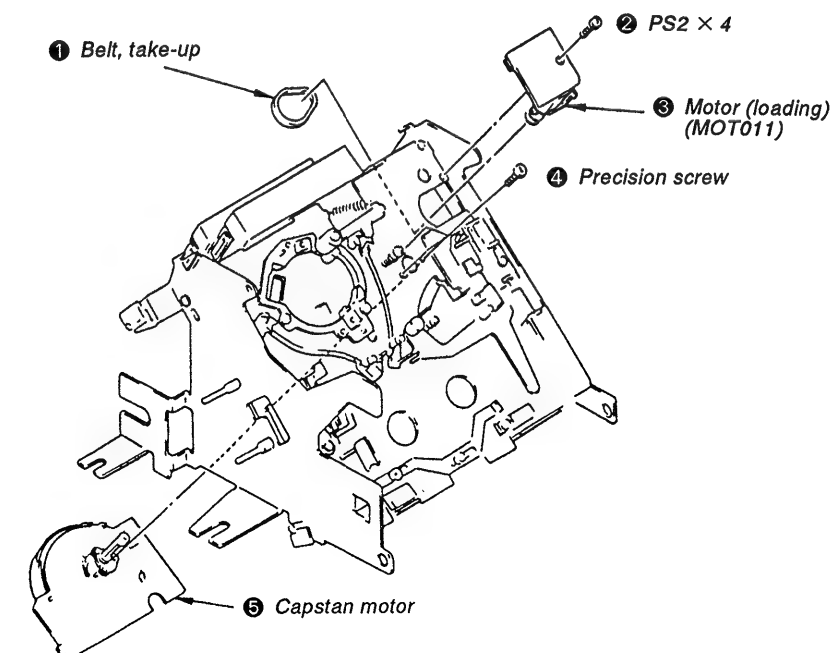
MD BOARD, REEL MOTOR U2-A (M905)



CASSETTE COMPARTMENT MOTOR (MOTO12), PULLEY, GEAR (CAM), SLIDER



LOADING MOTOR (MOTO11), CAPSTAN MOTOR U-17A (M902)



SECTION 3 ADJUSTMENTS

Notes When Making Adjustments

1. Adjustments should be performed in the order listed.
2. Use the following test tapes :

TY-7111 (8-909-812-00)	Level
TY-7252 (8-909-822-00)	Tracking
TY-7551 (8-909-814-00)	Functions
TY-30B (8-892-358-00)	Blank

Use the following torque meter :

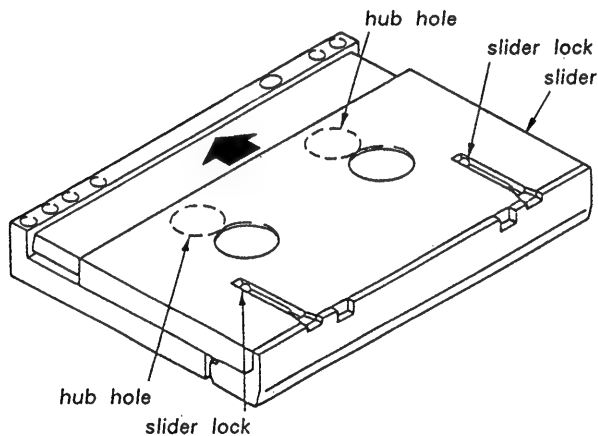
TW-7131 (8-909-708-71) FWD

3. Switches and controls should be set as follows unless otherwise specified.

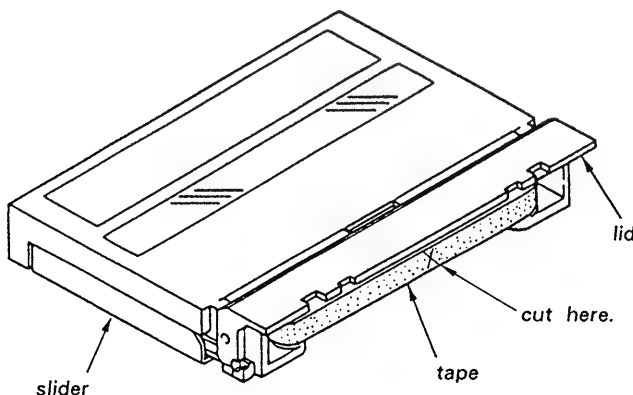
TIMER switch :	OFF
REC MODE switch :	LONG
INPUT switch :	COAXIAL
REC LEVEL control :	Min.
PHONES LEVEL control :	Min.

4. Creating an end sensor cassette

- (1) Press the tape slider lock and move the slider in the direction indicated by the arrow.

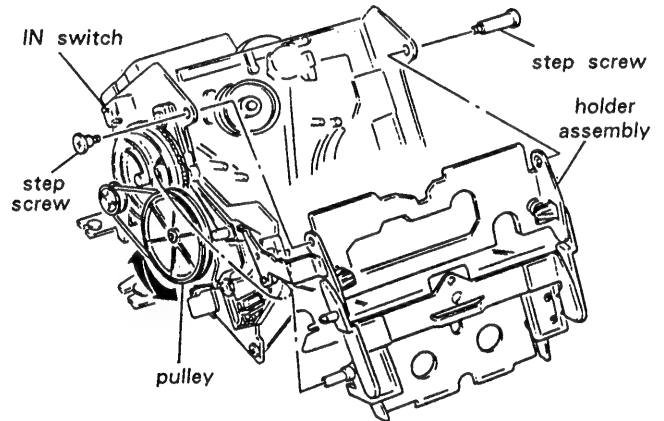


- (2) Open the lid and cut the tape.



- (3) Turn the hubs until the tape is completely inside the cassette (both T and S sides).
The end sensor cassette for end sensor adjustment is now ready for use.

5. Be careful not to move RV951 and RV952 on the RF AMP board in the mechanism assembly.
6. To adjust the tape path and guides, remove the holder assembly as shown in the diagram and use the DAT holder jig (J-2000-002-A). This will make it easier to perform adjustments.
 - First turning the pulley counterclockwise to put it in loading out status will make removal and reattachment of the holder assembly easier.
 - To perform adjustments, turn the pulley clockwise to put it in loading in status, load the cassette tape and set the IN switch to the ON position.



7. Test mode

To set to the test mode, short-circuit between Pin ⑦ (XTEST) and Pin ⑥ (GND) of CN553 on the digital board. At this time, "TEST" letters turn on red on the fluorescent display. And at the same time, turning on the date on the fluorescent display, it becomes to the torque measurement mode.

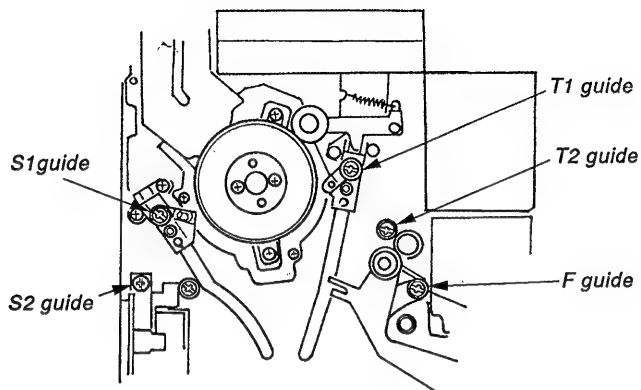
Test mode (Short-circuit between XTEST and GND)

- ① Turn off the date on the fluorescent display.
(Press COUNTER MODE key)
 - S2, T2, F guides Adjustment
 - End Sensor Adjustment
 - Tape Path Adjustment
 - DPG Adjustment
 - ATF Pilot Adjustment
 - ② Turn on the date on the fluorescent display.
(Press DATE-RECORD key)
 - FWD Torque Adjustment
 - FWD Back-Tension Adjustment
- } Torque Measurement Mode

To release the test mode, release the short-circuit point between XTEST and GND,
After the adjustments, be sure to release the test mode.

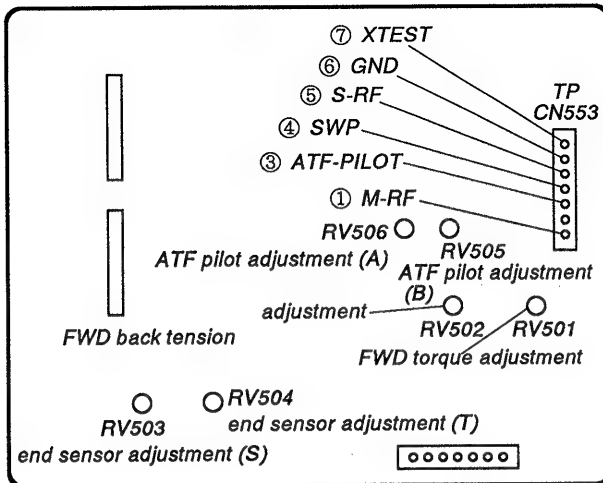
Adjust Parts Location

— Mechanism assembly —



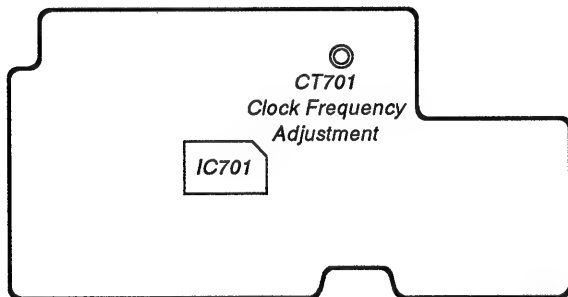
— Digital Board —

— SIDE B —



— Control Board —

— SIDE A —



3-1. MECHANICAL ADJUSTMENTS

After replacing the drum or related parts, adjust the S2, T2 and F guides and then perform the tape path (× 1.5 FWD mode) fine adjustment of electrical adjustments.,

S2, T2 Guide/F Guide Adjustment

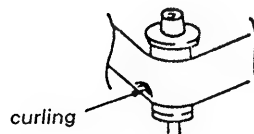
Adjustment Procedure :

1. Put the set into the test mode and load test tape TY-7252 (8-909-822-00).
2. Set the REC MODE switch to STANDARD (ATF : OFF) and press the AMS key.

Confirm there is no curling at the upper or lower flange of S2, T2, or F guides.

When there is curling, return higher S2, T2, F guides and adjust by screwing in.

* Curling :



"Curling" refers to distortion on the tape during FWD operation. It can be identified by directing a light at the tape.

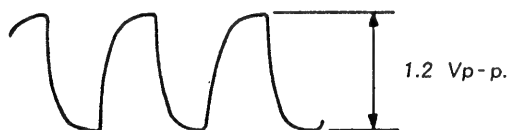
3-2. ELECTRICAL ADJUSTMENTS

End Sensor Adjustment

Perform the following adjustment when the holder has been removed or part of the mechanism deck section replaced.

Adjustment Procedure:

1. Connect an oscilloscope to CN554 pin ⑤ (SEND) (supply side) and CN554 pin ⑥ (TEND) (take-up side) on the digital board.
2. Load an end sensor cassette and put the set into the STOP (■) mode.
3. Adjust RV503 (supply side) and RV504 (take-up side) on the main board so that the oscilloscope waveform p-p value is 1.2 Vp-p.



Adjustment Point: digital board

FWD Torque Adjustment

Adjustment Procedure :

1. Put the set into the test mode and load the FWD torque meter TW-7131 (8-909-708-71).
2. Put the set into the PLAY (▶) mode.
3. Adjust RV501 so that the FWD torque value (take-up side rewinding torque) is between 10 – 15 g·cm (0.14 – 0.21 oz·inch).
4. Confirm that the value indicated by the torque meter is maintained for one full cycle.

Adjustment Point: digital board

FWD Back Tension Check

Check Procedure :

1. Put the set into the test mode and load the FWD torque meter TW-7131 (8-909-708-71).
2. Put the set into the PLAY (▶) mode.
3. Adjust RV502 so that the back tension (supply side) is between 8 – 9 g·cm (0.11 – 0.13 oz·inch).
4. Confirm that the value indicated by the torque meter is maintained for one full cycle.

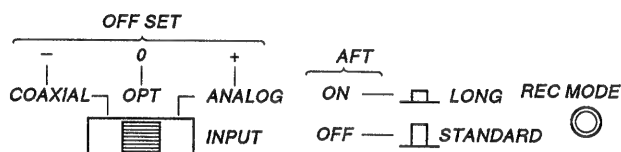
Tape Path Fine Adjustment (× 1.5 FWD Mode)

Perform the following adjustment when the drum has been replaced.

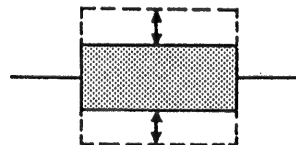
Adjustment Procedure:

1. Connect an oscilloscope CH-1 to CN553 pin ① (M-PF) and CH-2 to CN553 pin ④ (SWP) on the digital board.
2. Put the set into the test mode and load test tape TY-7252 (8-909-822-00).
3. Press the AMS (▶▶) key.

Each part of switches on Test Mode.

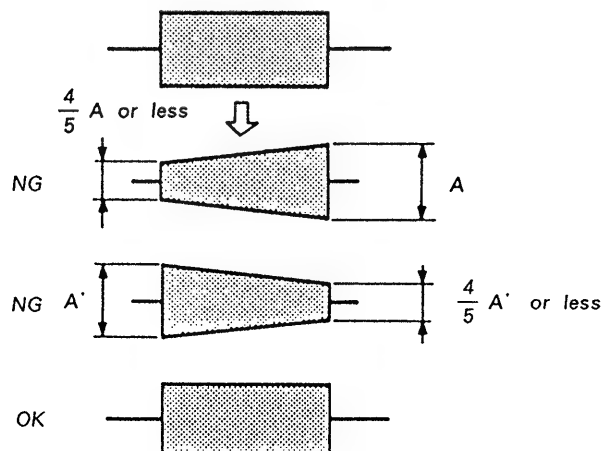


4. With the REC MODE switch set to STANDARD (ATF: OFF) and the INPUT switch set to ANALOG or COAXIAL (OFFSET: + or -), fine adjust the S1 and T1 guides so that the oscilloscope RF signal waveform remains the same when high-low is repeated.

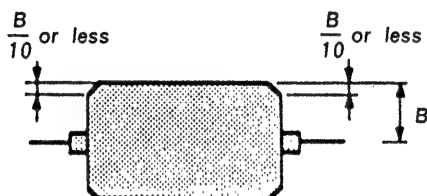


* Finish the adjustment by screwing in, and when there is curling at the upper or lower flange of S2, T2, or F guides, perform the guide adjustment.

5. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the INPUT switch set to ANALOG or COAXIAL (OFFSET: + or -).



6. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the INPUT switch set to OPTICAL (OFFSET: 0)
 - (1) Confirm that the RF signal waveform peak value is 60 mV or more.
 - (2) Confirm that the undershoot level of the RF signal waveform's flat portion is within 10%.



7. When the measured values are not within the above tolerances, repeat items 3 - 6 above.

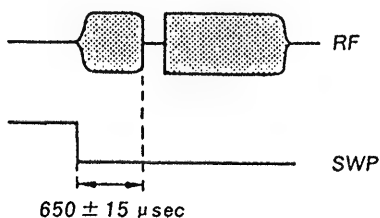
Adjustment Point: mechanism assembly

DPG Adjustment

Perform the following adjustment without fail when the drum has been replaced.

Adjustment Procedure:

1. Connect oscilloscope CH-1 to TP (RF) and CH-2 to TP (SWP) on the main board. (Use CH-2 as the trigger. When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
2. Put the set into the test mode and load test tape TY-7252 (8-909-822-00).
3. Set the REC MODE switch to LONG (ATF: ON) and the TIMER switch to OFF (OFFSET: 0).
4. Press the AMS (▶▶) key.
5. Press the ◀◀ and ▶▶ keys as appropriate so that the gap between the oscilloscope SWP and RF signals becomes $650 \pm 15 \mu\text{sec}$. (Hold the ◀◀ and ▶▶ keys down for more than 1 second to perform rough adjustment. Hold them down for approximately 0.2 seconds for fine adjustment.)

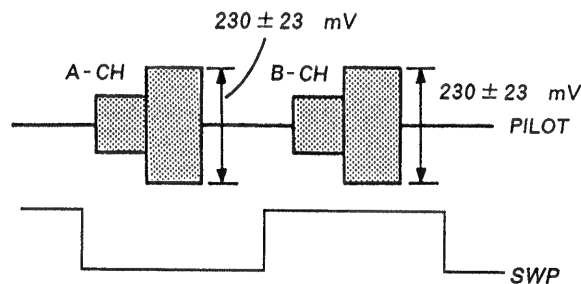


ATF Pilot Adjustment

Perform this adjustment after cleaning the heads with a cleaning cassette.

Adjust Procedure:

1. Connect oscilloscope CH-1 to CN553 pin ① (ATF-PILOT) and CH-2 to CN553 pin ④ (SWP) on the digital board. (Use CH-2 as the trigger.) When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
2. Put the set into the test mode and load test tape TY-7252 (8-909-822-00).
3. Put the set into the PLAY (▶) mode and adjust RV505 (B-CH) and RV506 (A-CH) on the main board so that the oscilloscope PILOT waveform P-P value is $230 \pm 23 \text{ mV}$.



Adjustment Point: digital board

3-3. CHECKS AND ADJUSTMENTS FOR DATE FUNCTION

Clock IC Back-up Check

- When there is the short-circuit position on the pattern around the lithium battery (BAT501) or the clock IC (IC712) or disconnecting CN573 on removing the front panel assembly the clock is reset.

(In spite of pressing PRESET button, the date indication becomes
 “_ _Y _ _M _ _D ” “_ _H _ _M _ _S”)

At this time, check the back-up function by the procedures given below.

- Connect DC voltmeter to CN554 pin ① (BATT+) and pin ② (BATT -) on the digital board.
- When the power is off, the voltage value of the item (1) should be less than +30 mV.

(When the voltage value becomes +30 mV or more, Check around IC712 or replace IC712.)

- When the power is on, the voltage value of the item (1) should be less than 0 mV (- (minus) indication).

(When the voltage value becomes + (plus) indication, Check around D718 or replace D718.)

- When the above voltage values are normal, set the preset date and time (year, month, day, day of the week, hour, minute, second) according to the instruction manual.
- After setting the time on the item (4), turn power off and turn power on several seconds later, and check the clock works normally.

Back-up Battery Replacement

The life of the back-up battery under normal use (normal temperature, normal humidity) is approximately ten years or more. (On the instruction manual, described “approximately five years”.)

Be carefull about the following points on the battery replacement.

- Repair the cause of the battery wastage by performing mentioned above “Clock IC Back-up Check”.
 - The open-circuit voltage of the replaced battery is 3.0 V or more as the new one, and when it is 2.0 V or less, it is completely consumed, replace it with new one.
 - After the battery replacement, perform “Clock IC Back-up Check” again and set the time*.
- * Time setting procedure described on page 9.

Clock Frequency Adjustment

Note:

- On normal repair, this adjustment is not necessary. Don't turn the trimmer capacitor CT701.
- Only when needing this adjustment (X702 replacement or so on), perform in the order given.
- Use the frequency counter with six digits or more.

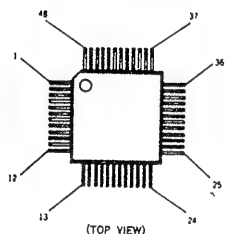
Adjustment Procedure:

- Connect a frequency counter to the test land “OSC FREQ” on the display board.
- Turn power on and adjust with CT701 so that the reading on the frequency counter becomes 2048.00 ± 0.01 Hz .(in normal temperature)
- Perform “Clock IC Back-up Check” described above.

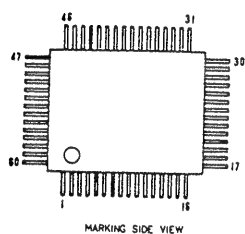
SECTION 4 DIAGRAMS

• SEMICONDUCTOR LEAD LAYOUTS

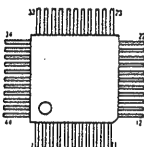
A1QH3020S

CXA1045Q-Z
CXA1364R

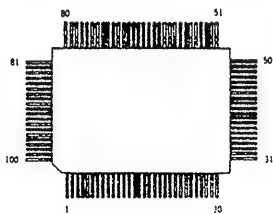
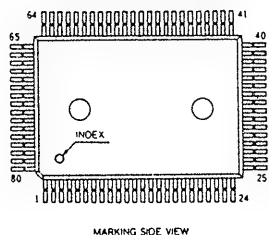
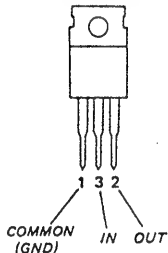
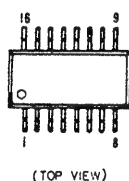
CXD1136Q



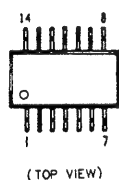
CXD2552Q-1



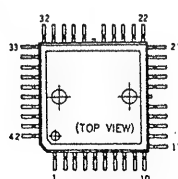
CXD2601AQ

CXP80524-020Q
MSC62408-020GS-KM5F7805L-720
M5F7808
TA7805S
 μ PC2405HF
 μ PC2406HFM5F7905L
TA7905SMC14051BF
MSM6338MS-K

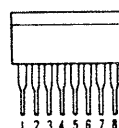
MC14069UBF



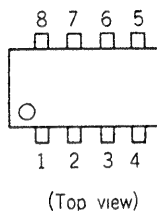
M50782FP



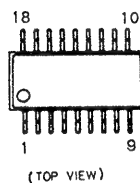
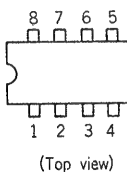
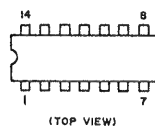
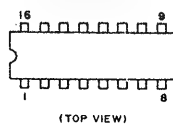
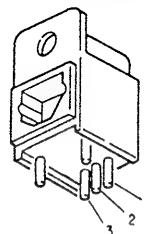
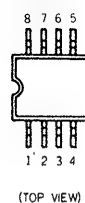
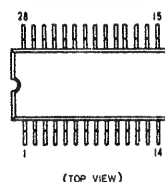
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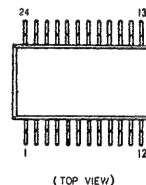
RC4560DD



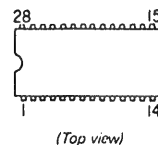
RF5C62

LM393P
M5239P
NE5532P
 μ PC358CSN74HC393N
LC74HC08
SN74HCU04AN
SN74HC00AN
SN74HC04AN
SN74HC14AN
SN74HC74N
SN74LS624N
TC74HCU04AF
MC74AC74NSN74HC157AN
SN74HC175AN
TC74HC123APGP1F32R
GP1F32TCXK1011M
LM358M
LM393MCXA1046M
CXK58257M-12L

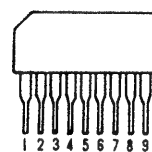
CXK5816M-12L



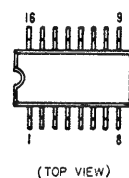
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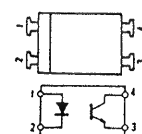
TC5081AP



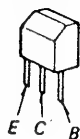
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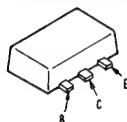
PC817-C



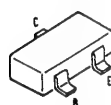
2SD1312-K



2SB798-DL
2SD1621-R



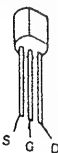
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DTC114EK
DTC124EK
DTC143TK
DTC144EK
2SC1623-L6



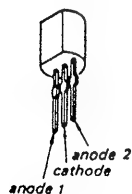
2SK241-GR



2SK246-GR
2SK30A-O



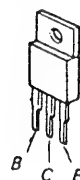
KV1320



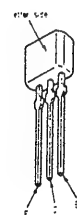
DTA114ES
DTC114ES



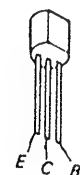
2SA985A-P
2SB1370-EF
2SC2275-P
2SD2061-EF



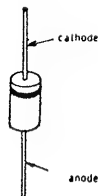
2SA1175-HFE
2SC2785-HFE



2SA1371-E
2SB1013-4
2SC3468-E
2SD1387-3



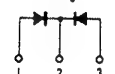
EQB01-08Q
HZ4BLL
10E2N
30DF2



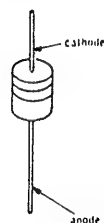
F10P20F



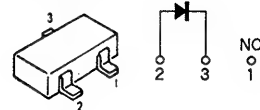
F10P20FR



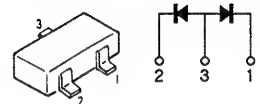
HZS6A1L
HZS33-1L
RD3.3ES-B2
RD3.9ES-B2
RD5.1JS-B2
1SS168
1SS202-1
11ES2



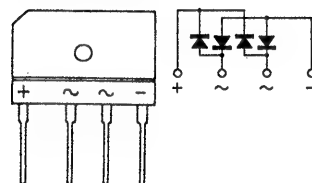
SB05-05CP



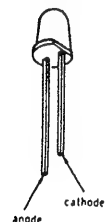
1S2836



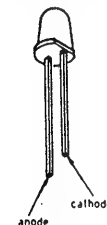
RBV-602-01



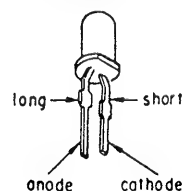
AA3432S



SLR-34MC3
SLR-34VC3



SEL2510W-D
GL-3PR9



4-1. PIN FUNCTION

IC501 MASTER microcomputer (CXP80524)



While exchanging data with the display microcomputer (IC701) by the serial communication, this IC controls the mechanism check servo and selects inputs DSP (IC502, 503) and the attenuator (IC504).

PIN	SIGNAL NAME	I/O	LOGIC		FUNCTION															
			O	I																
1	ATTEX	O	Outside (ATTCK)	Inside (1/8 LECK)	Attenuator (IC504) clock select output															
2	ATTCK	O	—	—	Attenuator (IC504) level set clock output															
3	FPON	O	OFF	ON	FWD plunger (PM002) ON/OFF output															
4	FPKI	O	OFF	ON	FWD plunger (PM002) KICK output															
5	TLOCK	O	ON	OFF	REEL T side LOCK output															
6	CPDIR	O	FWD	RVS	CAPSTAN DIRECTION select output															
7	BPON	O	OFF	ON	REEL BRAKE plunger (PM001) ON/OFF output															
8	BPKI	O	OFF	ON	REEL BRAKE plunger (PM001) KICK output															
9	DRON	O	OFF	ON	DRUM motor ON/OFF output															
10	DRDIR	O	NORM	RVS	DRUM DIRECTION select input															
11	OPT/COA	O	OPTICAL	COAXIAL	DIGITAL IN, OPTICAL/COAXIAL select output															
12	DIG/ANA	O	DIGITAL	ANALOG	INPUT/DIGITAL/ANALOG select output															
13	REC/PB	O	REC	PB	Mode REC/PB select input															
14	MST/SLV	O	SLAVE	MASTER	MONITOR MASTER/SLAVE (SOURCE/TAPE) select															
15	SLVMUT	O	OFF	MUTE	MUTE output so SLAVE DSP (IC503)															
16	MSTMUT	O	OFF	MUTE	MUTE output to MASTER DSP (IC502)															
17	FS1	O	—	—	fs select <table><tr><td></td><td>STOP</td><td>44.1K</td><td>32K</td><td>48K</td></tr><tr><td>FS1</td><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>FS0</td><td>0</td><td>1</td><td>0</td><td>1</td></tr></table>		STOP	44.1K	32K	48K	FS1	0	0	1	1	FS0	0	1	0	1
	STOP	44.1K	32K	48K																
FS1	0	0	1	1																
FS0	0	1	0	1																
18	FS0	O	—	—																
19	DFMUT	O	OFF	MUTE	MUTE output to DIG-FIL (IC312)															
20	DOCNT	O	OFF	ON	DIGITAL OUT (ON/OFF) CONTROL output															
21	LMEJ	O	OFF	ON	LOADING motor EJECT direction } BRAKE MODE LOADING motor LOAD direction } at ON-ON															
22	LMLD	O	OFF	ON																
23	LINMUT	O	OFF	MUTE	Line mute (relay) output															
24	DISPSL	O	ON	OFF	DISPLAY microcomputer communication SELECT output															
25	TEND	I	—	—	T side END SENSOR TLED ON } DC (=): Magnetic part S side END SENSOR SLED ON } AC (□□□): Leader tape															
26	SEND	I	—	—																
27	CMCL	O	OFF	ON	CAS-CON. motor CLOSE direction } BRAKE MODE CAS-CON. motor OPEN direction } at ON-ON															
28	CMOP	O	OFF	ON																
29	TLED	O	OFF	ON	T side LED drive output } DUTY 50% S side LED drive output } DRIVE on T/S antiphase															
30	SLED	O	OFF	ON																
31	MP	I	Inside ROM	Outside ROM	MICRO PROCESSOR MODE input (fixed to "0")															
32	XRST	I	RESET	 RELEASE	RESET															
33	Vss	—	—	—	GND															
34	XTAL	—	—	—	NC															
35	EXTAL	—	—	—	Microcomputer external clock (=MCLK=9.408 MHz)															
36	DISPLSY	I	ON	OFF	DISPLAY microcomputer communication sync input															
37	DISPDI	I	—	—	DISPLAY microcomputer communication serial data input															
38	DISPDO	O	—	—	DISPLAY microcomputer communication serial data output															

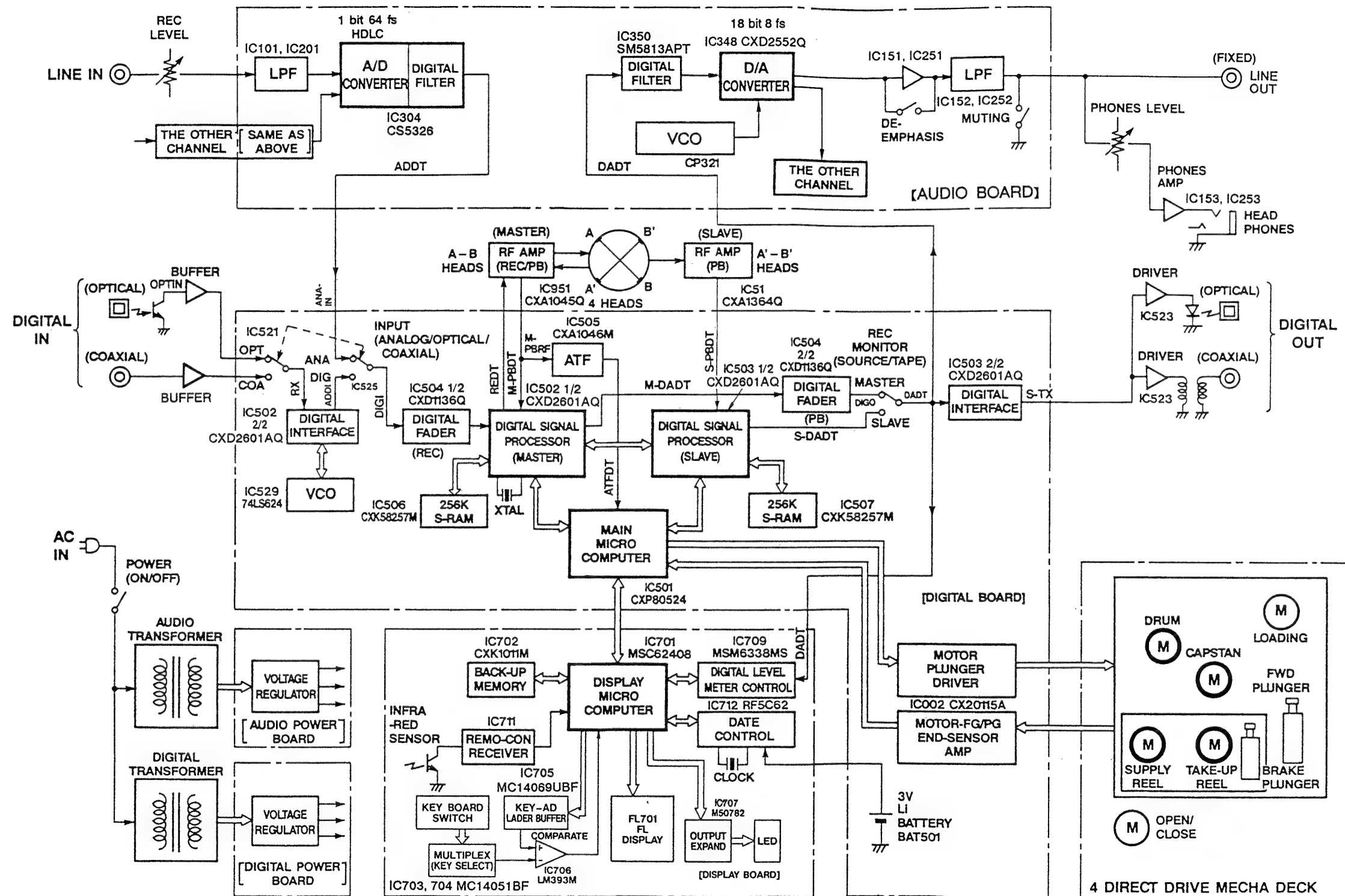
PIN	SIGNAL NAME	I/O	LOGIC		FUNCTION
			O	I	
39	DISPCK	I	—	—	DISPLAY microcomputer communication serial clock input
40	SBSY	I	ON (communicatable)	OFF (not communicatable)	Signal processing communication SUB DATA SYNC. input
41	SBDI	I	—	—	Signal Processing communication SUB DATA IN. input
42	SBDO	O	—	—	Signal Processing communication SUB DATA OUT. input
43	SDCK	O	—	—	Signal Processing communication SUB DATA CLOCK. input
44	AVss	—	—	—	Analogue input GND
45	AVref	—	—	—	Analogue input REFERENCE (+5 V)
46	AVdd	—	—	—	Analogue input +5 V
47		I			Not used (Pull-up)
48	SWAD3	I	—	—	SWITCH A/D input (CAS-CON system)
49	SWAD2	I	—	—	SWITCH A/D input (LOADING system)
50	SWAD1	I	—	—	SWITCH A/D input (RECGN system)
51	SWAD0	I	—	—	SWITCH A/D input (RECGN system)
52	LEVSYN	I	NONE	MUSIC	LEVEL SYNC input (Write START-ID by the audio input)
53	MUTM	I	OFF	MUTE	MUTE monitor input from MASTER DSP (IC502)
54	ATFIN	I	—	—	ATF PILOT signal input
55	TFG	I	—	—	T-REEL FG input
56	SFG	I	—	—	S-REEL FG input
57	CFG	I	—	—	CAPSTAN FG input
58	DFG	I	—	—	DRUM FG input
59	DPG	I	—	—	DRUM PG input
60	DREF	I	—	—	DRUM REFERENCE $\frac{SP}{100/3}, \frac{LP}{50/3}, \frac{SEARCH}{1.6k}$ (Hz $\pm \alpha$) input
61	MCLK	I	—	—	MASTER CLOCK (FCH=9.408 MHz) input
62	PBDT	I	—	—	PB (playback) DATA input
63	SWP	O	Ach	Bch	SWITCHING PULSE
64	DPWM	O	—	—	DRUM PWM output
65	CPWM	O	—	—	CAPSTAN PWM output
66	TPWM	O	—	—	T-REEL PWM output
67	SPWM	O	—	—	S-REEL PWM output
68	ADRES	O	RESET	ACTIVE	Reset output for AD converter
69	ERMN	I	RF is none and REC	RF exists	ERROR MONITOR (PBRF exists or not) input
70	XTEST	I	ON	OFF	TEST MODE input
71	POWDN	I	ON	OFF	POWER DOWN detect input (AC POWER OFF input)
72	Vdd	—	—	—	+5 V
73	Vss	—	—	—	GND
74	NC	—	—	—	Not connected
75	ATFS2	O	—	—	ATF Sync signal output to MASTER DSP (IC502)
76	DIVCO	O	OSC ON	OSC STOPS	Osc. ON/OFF select output to DIG-IN VCO (IC529)
77	ATFS3	O	—	—	SYNC3/RF AMP MODE for ATF (IC505)
78	LP/SP	O	LP	SP	LONG PLAY/STANDARD PLAY select output
79	XDTR	O	ON	OFF	DATA RECORDER MODE (ON during LP after-recording or searching)
80	ATTMUT	O	OFF	MUTE	Attenuator (IC504) MUTE, (ON during fading)

IC701 DISPLAY MICROCOMPUTER (MSC62408)

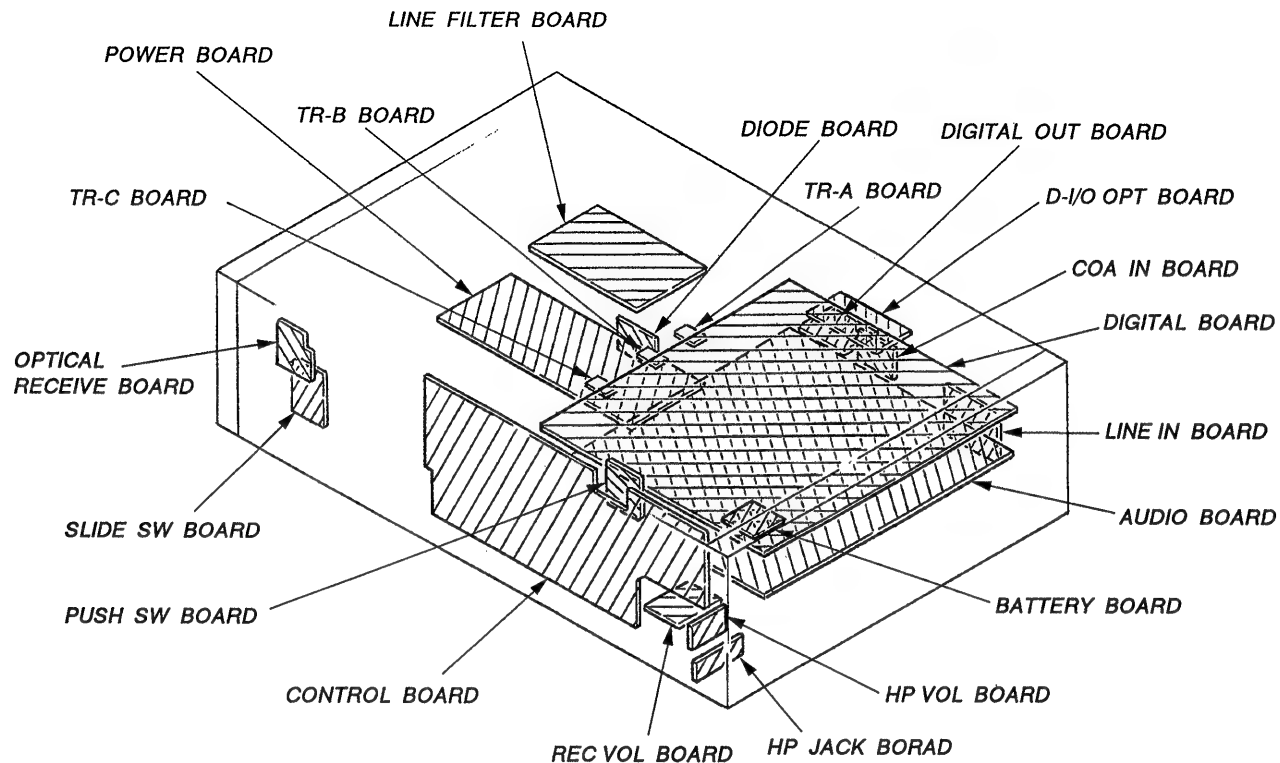
While serial communicating, this IC controls the fluorescent display tube, the level meter (IC709), the clock (IC712), the remote control signal, LED indication by the expansion port (IC707), key input scan, address set for SRAM (IC718).

PIN	SIGNAL NAME	I/O	LOGIC		FUNCTION
			O	I	
1 – 2	D6 – D7	I/O	—	—	Data bus
3	PMODE0	I			PORT MODE 0 PORT MODE 1 PORT MODE 2 <div>Mode setting input (normally open) for each processing</div>
4	PMODE1	I			
5	PMODE2	I			
6	MMUTE	I	OFF	MUTE	Level meter muting input
7	ROMSI	I	—	—	Serial data input from E ² PROM (IC702)
8	ROMBY	I	ON	OFF	BUSY signal input from E ² PROM (IC702)
9	CMPIN	I	Vref < Vkey	Vref > Vkey	Comparator out input for KEY A/D
10	MSTAK	O	ON	OFF	Acknowledge output to the master microcomputer (IC501)
11	CPUSC	O	—	—	On the microcomputer communication, serial clock output
12	CPUSO	O	—	—	On the microcomputer communication, serial data output
13	CPUSI	I	—	—	On the microcomputer communication, serial data input
14	MOTUP	O	OFF	ON	UP output for the volume with motor
15	MOTDN	O	OFF	ON	DOWN output for the volume with motor
16	CLKCE	O	ON	OFF	Chip enable output to the real time clock (IC712)
17	RMC	I	—	—	Received remote control signal input
18	MSTSY	I	ON	OFF	Sync input from the master microcomputer (IC501)
19	TIMIN	I	ON	OFF	The real time clock (IC712) timing signal input
20	XRST	I	RESET	RELEASE	Microcomputer reset signal input
21	TEST	I	—	 —	Test mode (Normally GND level)
22	EXPST	O	LATCH	ACTIVE	Strobe signal output to the output expansion IC (IC707)
23	METCE	O	 ON	OFF	Chip enable signal output to the meter IC (IC709)
24	WR	O	ON	OFF	WRITE signal output to S-RAM (IC708) and the meter IC (IC709)
25	RD	O	ON	OFF	READ signal output to S-RAM (IC708) and the meter IC (IC709)
26	RAMCE	O	ON	OFF	Chip enable signal output to S-RAM (IC708)
27	ROMSO	O	—	—	Serial data output to E ² PROM (IC702)
28	ROMSC	O	—	—	Serial clock signal output to E ² PROM (IC702)
29	ROMCE	O	ON	OFF	Chip enable signal output to E ² PROM (IC702)
30	OSCI	O	—	—	Ceramic oscillator for clock connecting terminal (4.19 MHz)
31	OSCO	O	—	—	Ceramic oscillator for clock connecting terminal (4.19 MHz)
32	GND	O	—	—	GND
33 – 40	T0 – T7	O	OFF	ON	FL grid output
41 – 48	S31 – S24	O	OFF	ON	FL segment output
49	VFLT	—	—	—	B+ for FL (+35 V)
50 – 73	S23 – S0	O	OFF	ON	FL segment output
74	VDD	—	—	—	+5 V power supply
75 – 80	D0 – D5	I/O	—	—	Data bus

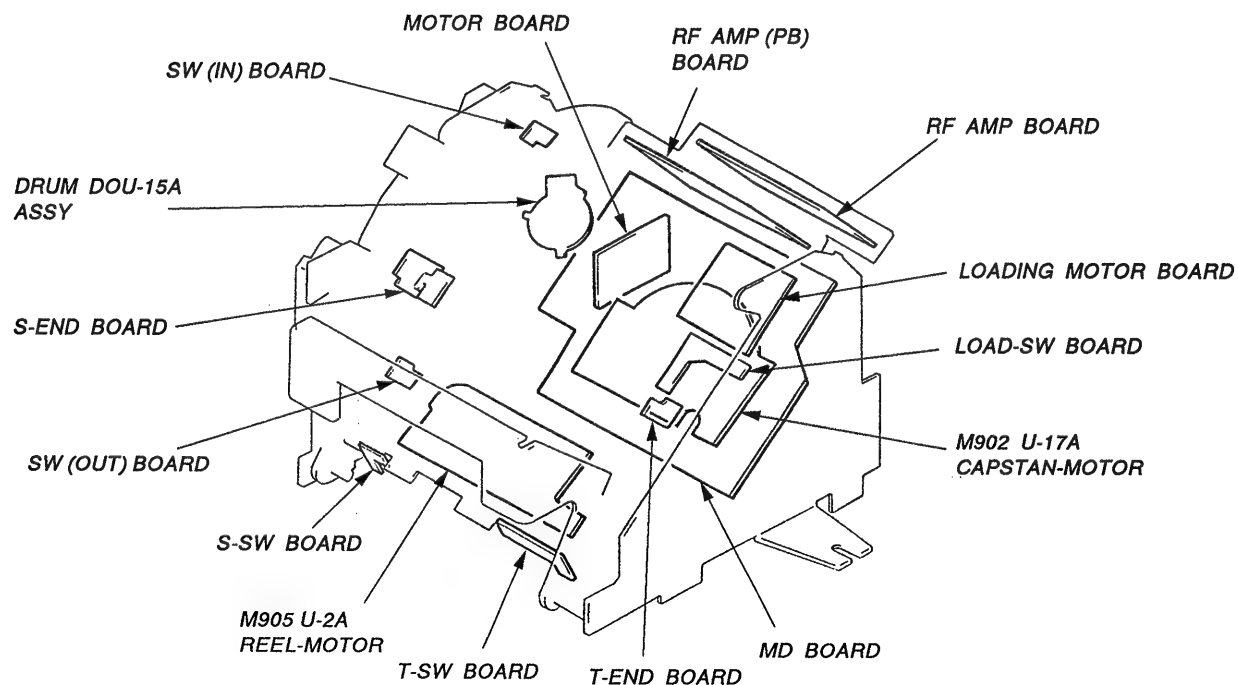
4-2. BLOCK DIAGRAM



• CIRCUIT BOARDS LOCATION



(DATM-51)

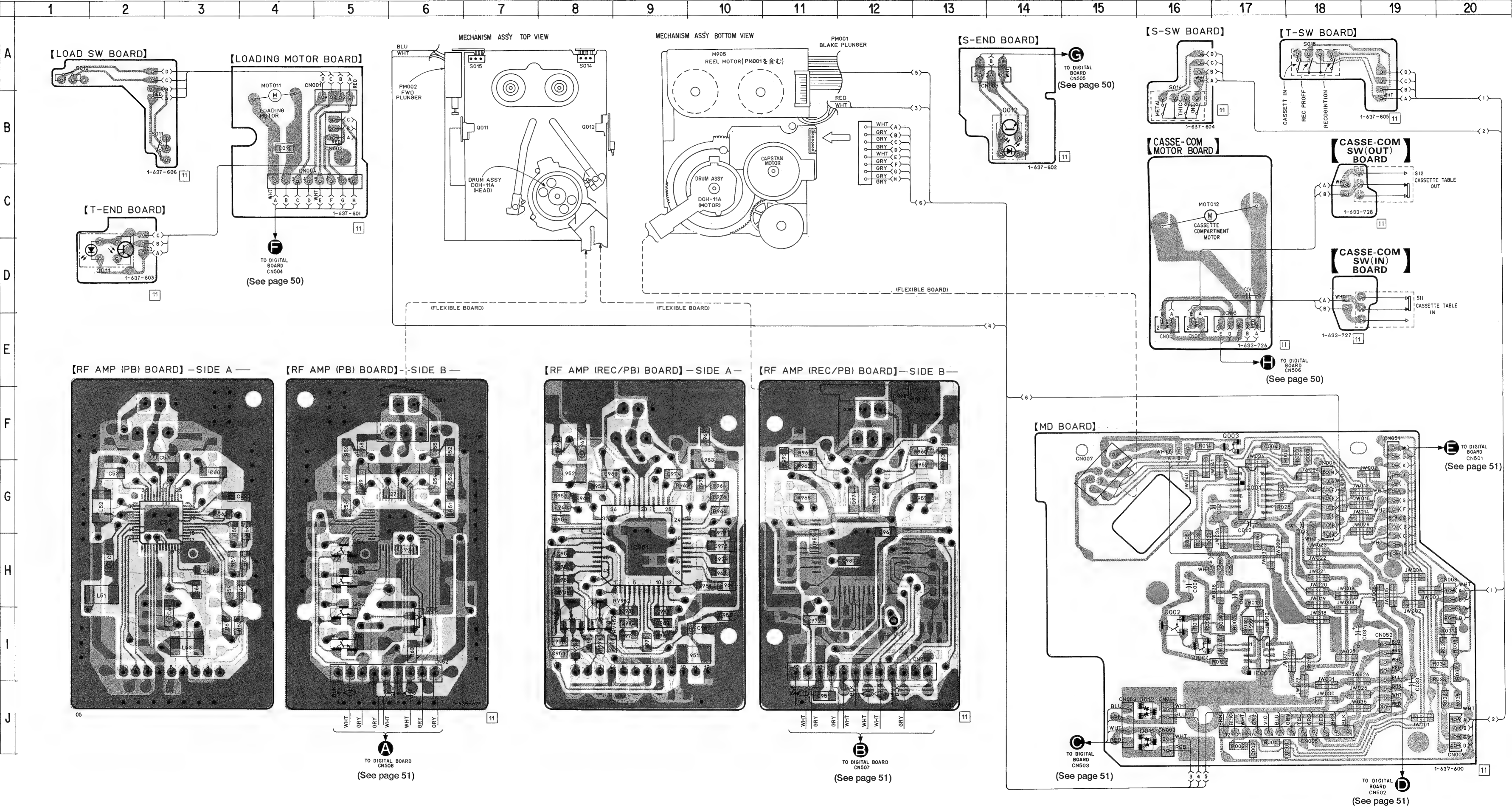


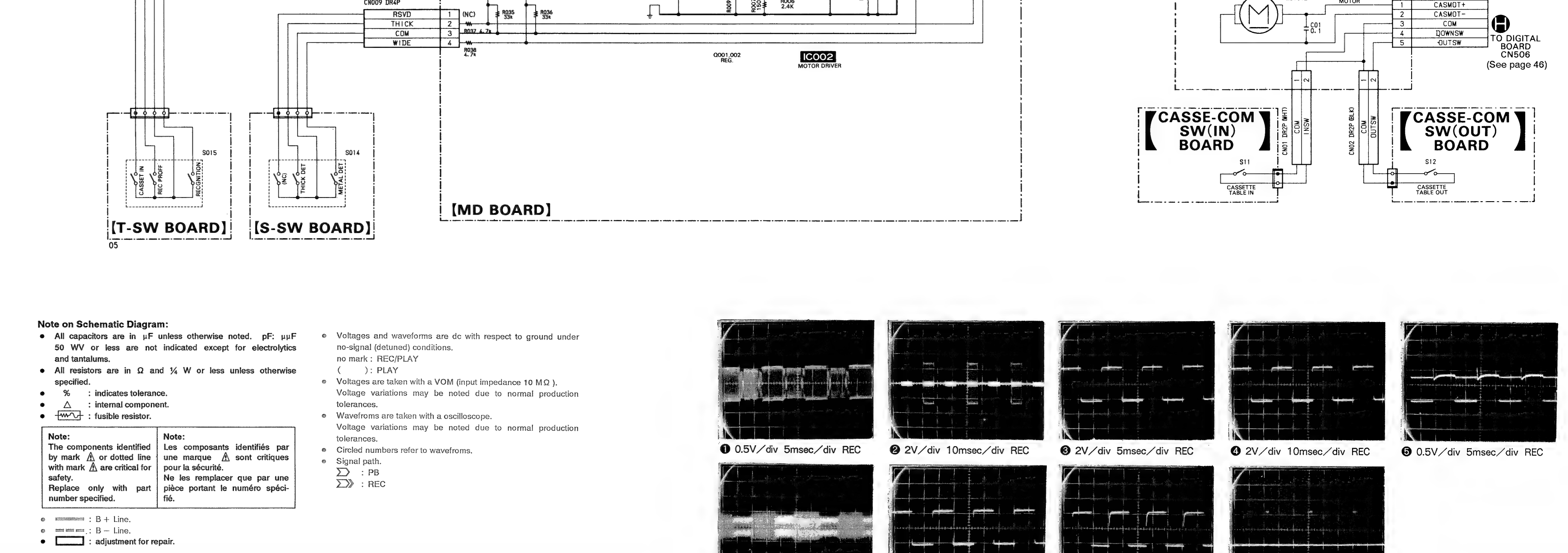
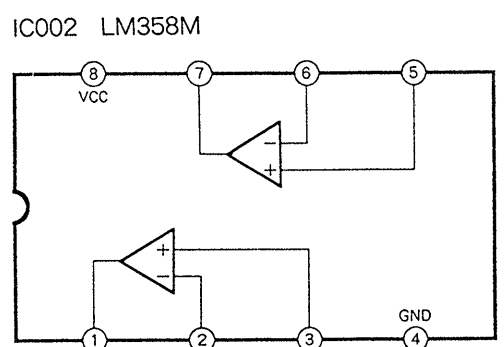
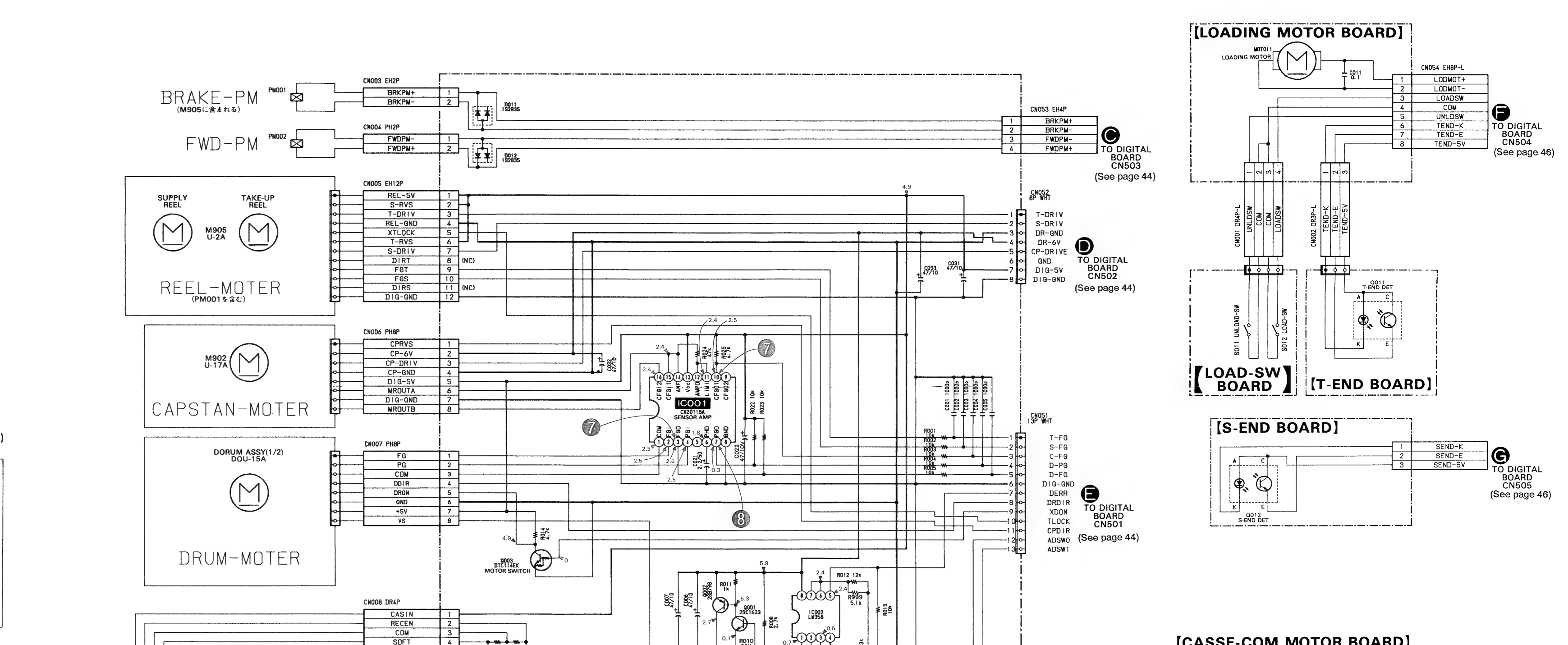
4-3. PRINTED WIRING BOARDS – RF/MD SECTION –


● Semiconductor Location

Ref. No.	Location
D011	J-16
D012	J-16
IC51	G-2
IC001	G-17
IC002	I-17
IC951	H-9
Q51	I-5
Q52	I-5
Q53	H-5
Q54	H-5
Q55	I-6
Q001	I-16
Q002	I-16
Q003	F-17
Q011	D-2
Q012	B-14

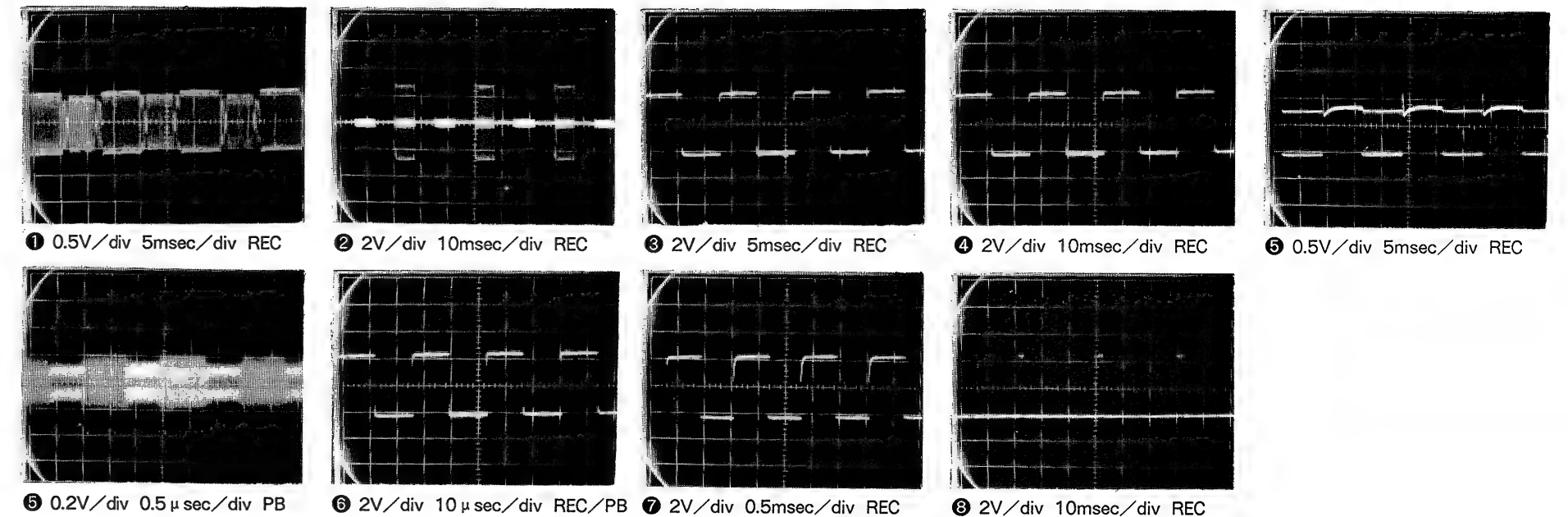
- Note on Mounting Diagram:
- : parts extracted from the component side.
 - : parts extracted from the conductor side.
 - : parts mounted on the conductor side.
 - : Through hole.
 - : Jumper wire connected to the ground pattern on the component side.
 - ▨ : Pattern on the side which is seen.
 - ▩ : Pattern of the rear side.





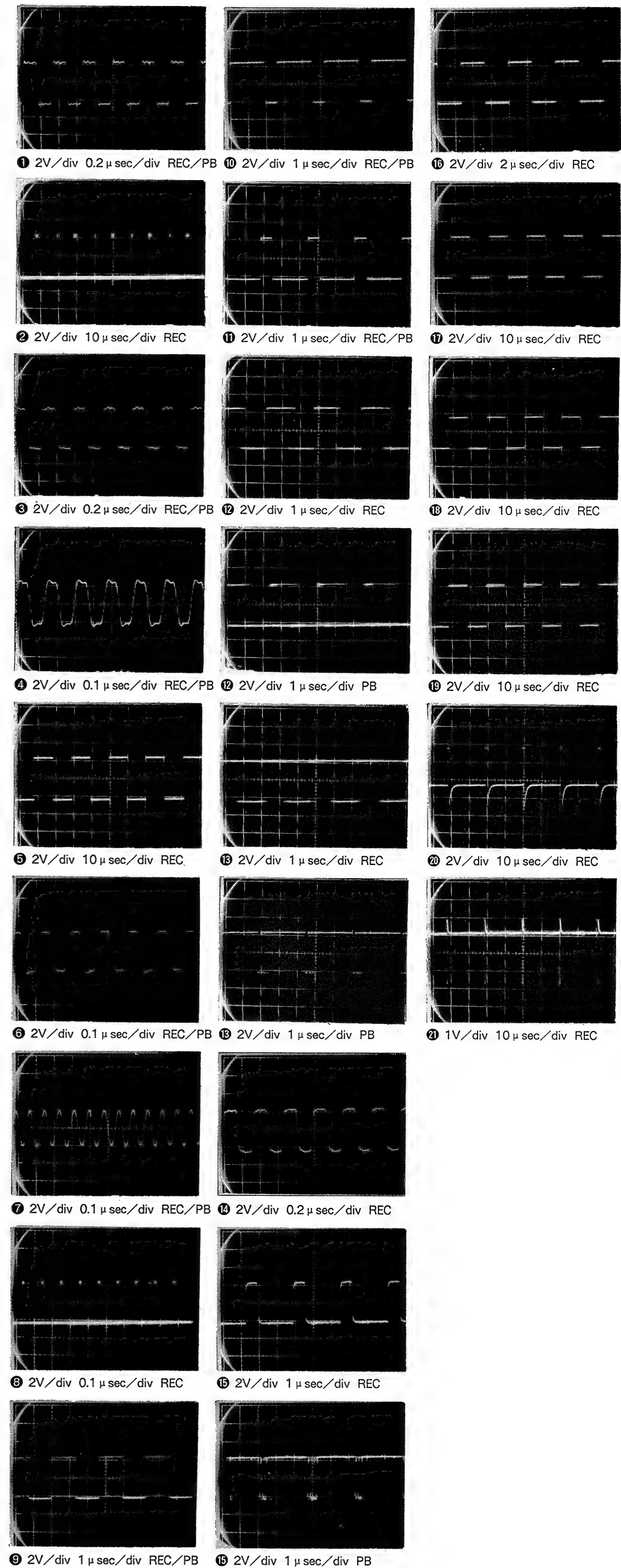
Note:
Les composants identifiés par une marque  sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark : REC/PLAY
() : PLAY
- Voltages are taken with a VOM (input impedance 10 MΩ).
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope.
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
Σ : PB
Σ : REC

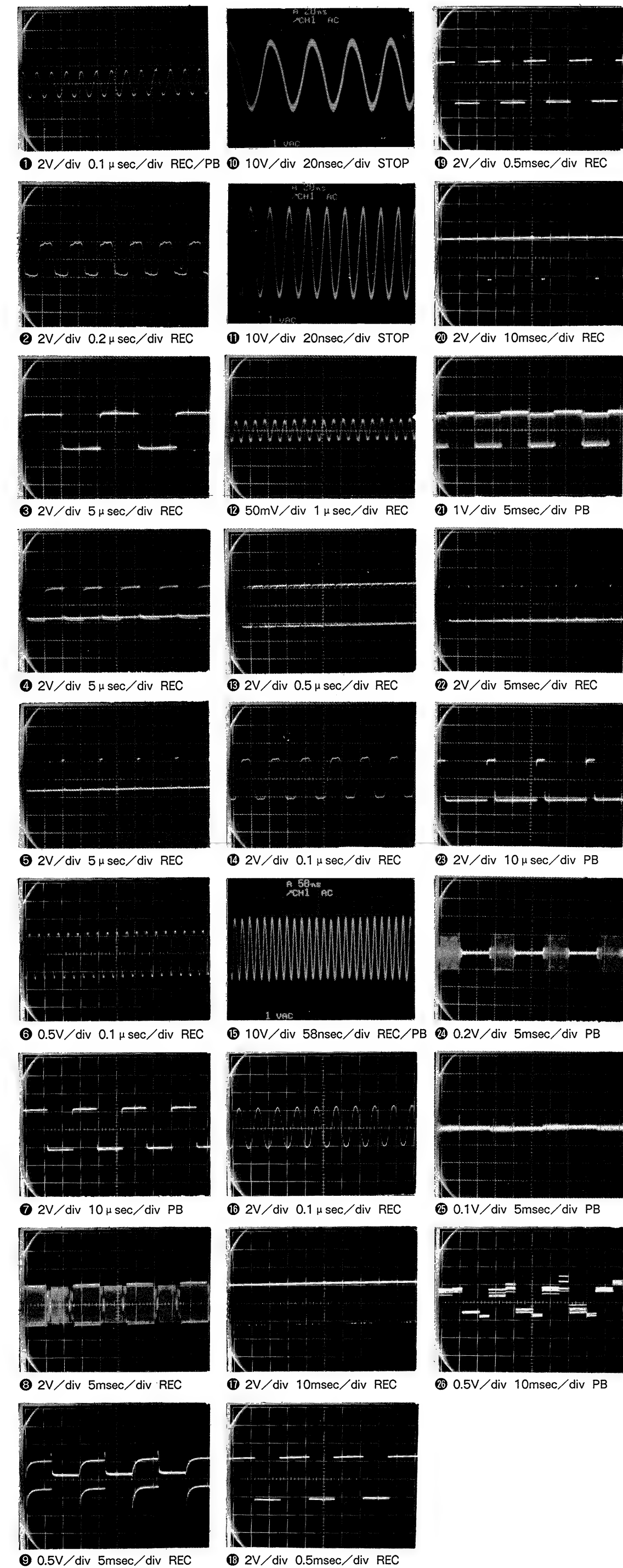
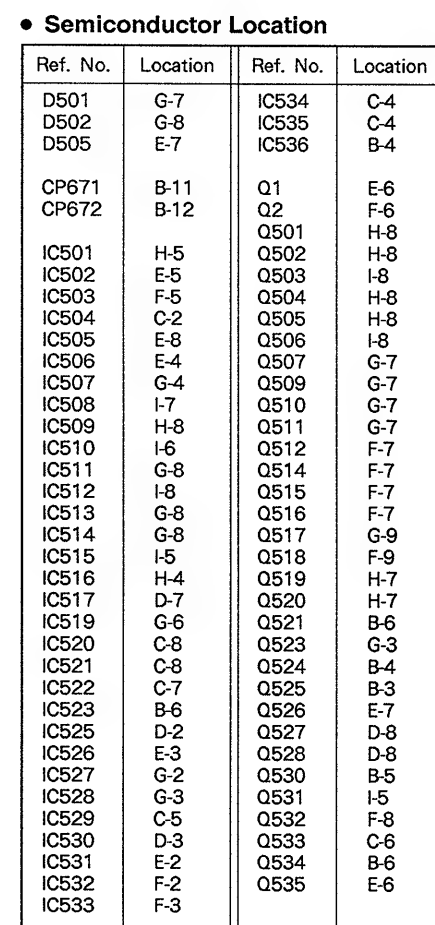


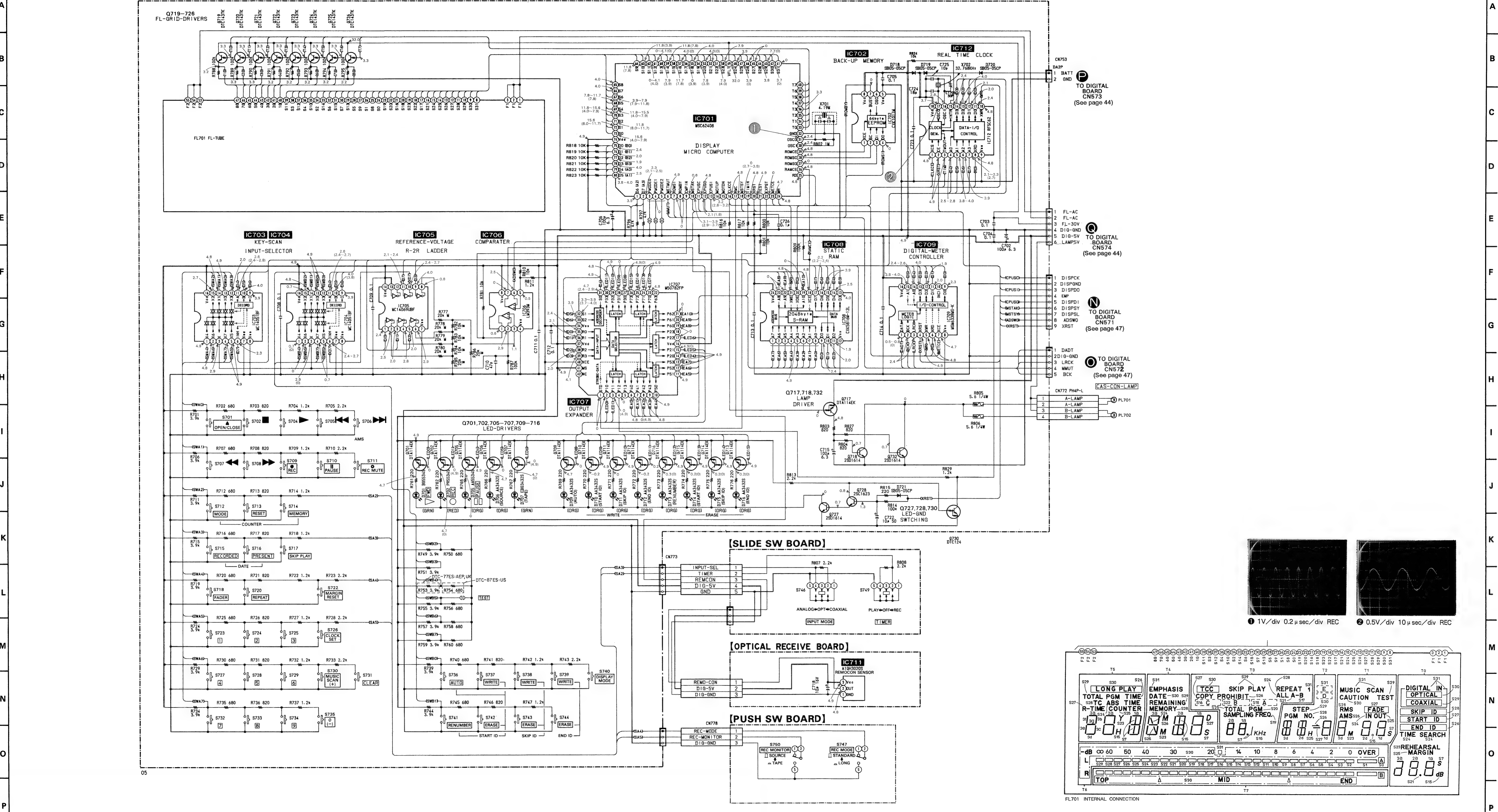


Ref. No.	Location	Ref. No.	Location
D101	F-9	IC348	E-7
D102	F-9	IC349	E-5
D201	F-11	IC350	C-3
D202	F-11	IC351	C-4
D326	B-10	IC352	G-7
D326	B-8	IC355	D-6
D349	D-6	IC356	E-5
D351	F-7	IC357	C-6
D351	C-5	IC358	B-5
D352	C-6	IC359	E-6
D353	H-4	IC360	C-6
D354	H-4	IC361	B-4
D355	I-6		
D357	I-6	Q325	C-10
D357	J-7	Q327	C-10
D358	J-7	Q328	B-7
D359	D-4	Q328	B-7
		Q329	C-10
IC101	H-10	Q330	C-7
IC102	H-10	Q331	B-11
IC151	H-4	Q332	B-7
IC152	H-5	Q333	B-10
IC153	I-6	Q334	B-7
IC201	H-10	Q350	G-6
IC202	H-10	Q351	B-8
IC251	H-8	Q352	C-6
IC252	H-8	Q353	D-6
IC253	I-7	Q354	J-4
IC301	G-11	Q355	J-4
IC302	G-10	Q356	J-5
IC303	D-9	Q357	J-4
IC304	E-10	Q358	J-4
IC305	D-11	Q359	E-3





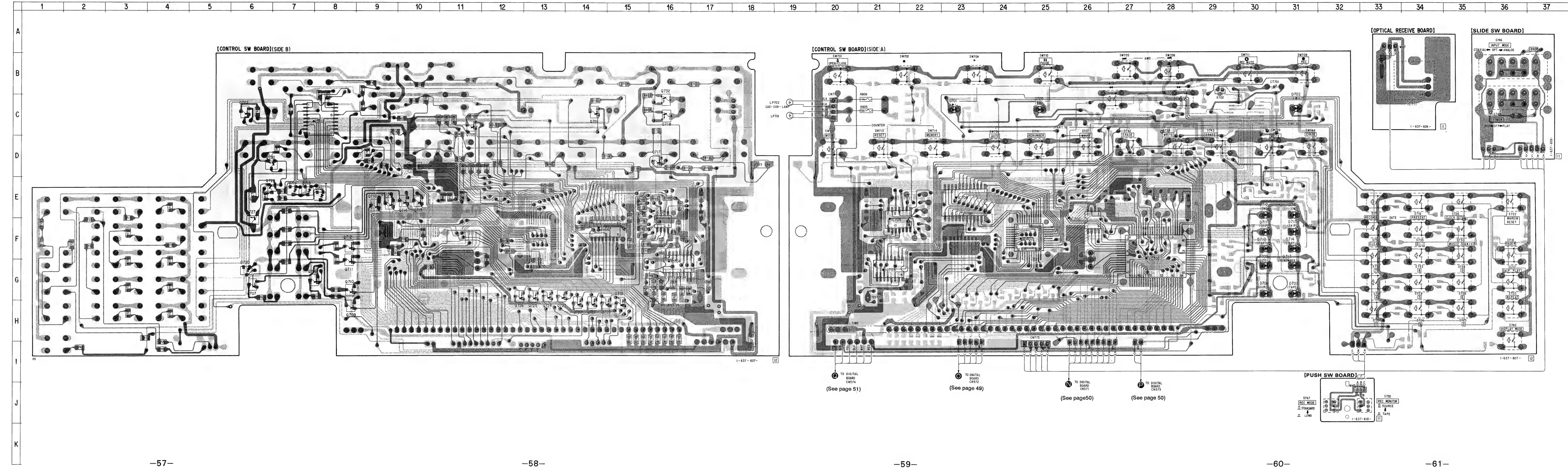




Ref. No.	Location	Ref. No.	Location
D701	C-23	D707	C-14
D702	C-31	D708	C-6
D705	C-25	D705	C-11
D706	G-30	D706	G-7
D707	G-31	D707	G-8
D708	G-30	D708	H-5
D710	F-30	D710	G-8
D711	F-30	D711	G-8
D712	E-30	D712	F-8
D713	G-31	D713	E-10
D714	F-31	D714	E-10
D715	F-31	D715	E-9
D716	E-31	D716	E-9
D717	E-7	D717	D-16
D719	E-7	D718	C-16
D720	G-6	D719	H-15
D721	E-8	D720	H-14
		D721	H-14
IC701	F-28	D722	H-14
IC702	F-28	D723	G-13
IC703	G-21	D724	G-13
	G-16	D725	G-13
IC705	F-21	D726	G-12
IC706	F-16	D727	F-6
	F-25	D728	E-6
IC707	E-23	D730	D-6
IC709	F-14	D732	C-16
IC711	B-34		
IC712	C-8		



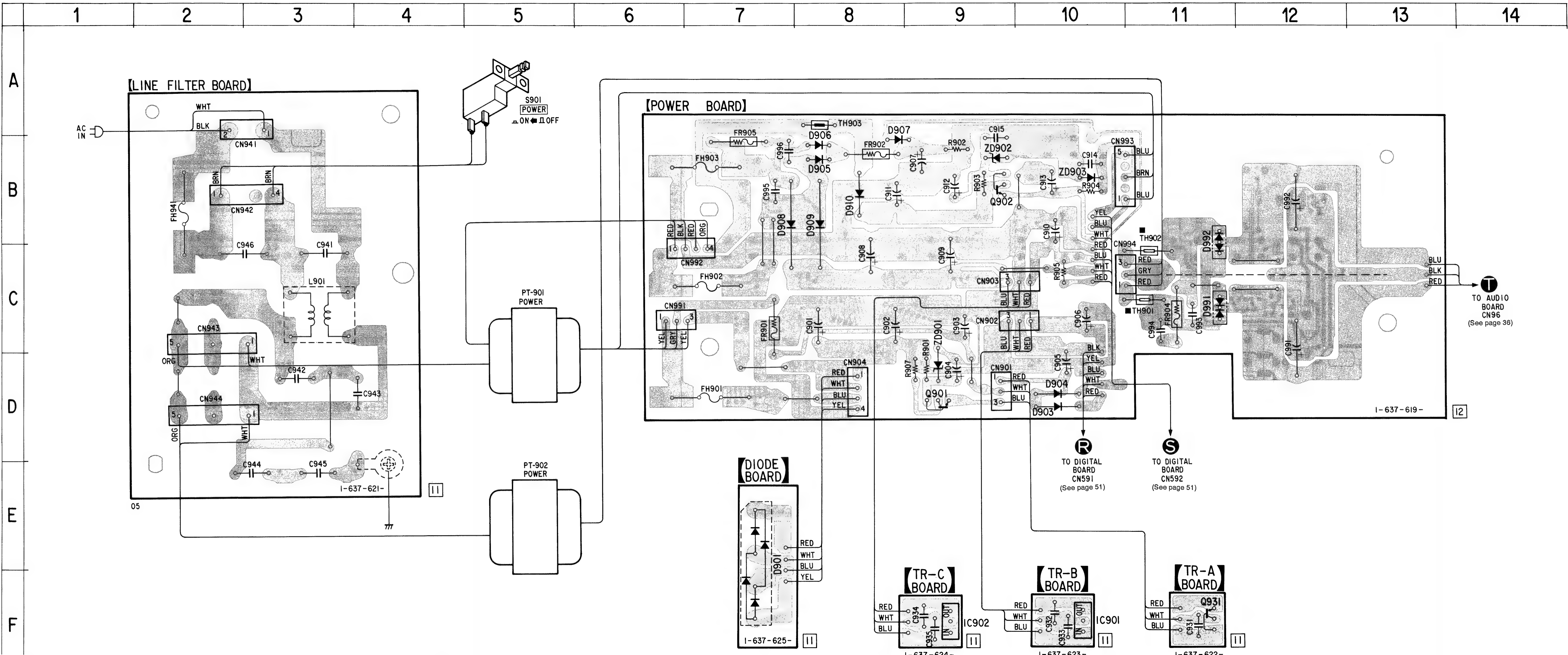
- See page 26 for note.



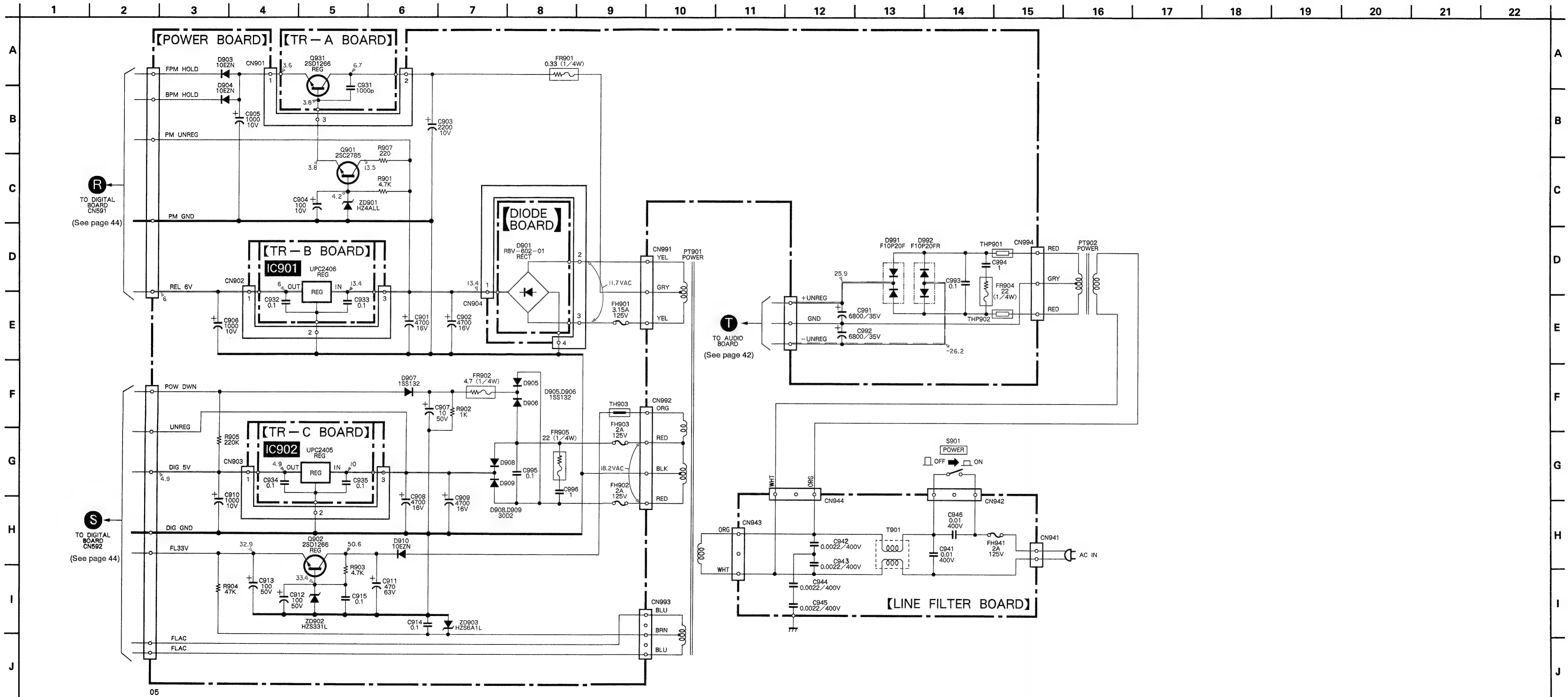
• See page 26 for note.

• Semiconductor Location

Ref. No.	Location
D901	E-7
D903	D-10
D904	D-10
D905	B-8
D906	B-8
D907	B-8
D908	B-7
D909	B-8
D910	B-8
D991	C-11
D992	C-11
ZD901	D-9
ZD902	B-9
ZD903	B-10
IC901	F-10
IC902	F-9
Q901	D-9
Q902	B-9
Q931	F-11



4-12. SCHEMATIC DIAGRAM – POWER SECTION – • See page 31 for note.



SECTION 5

EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)

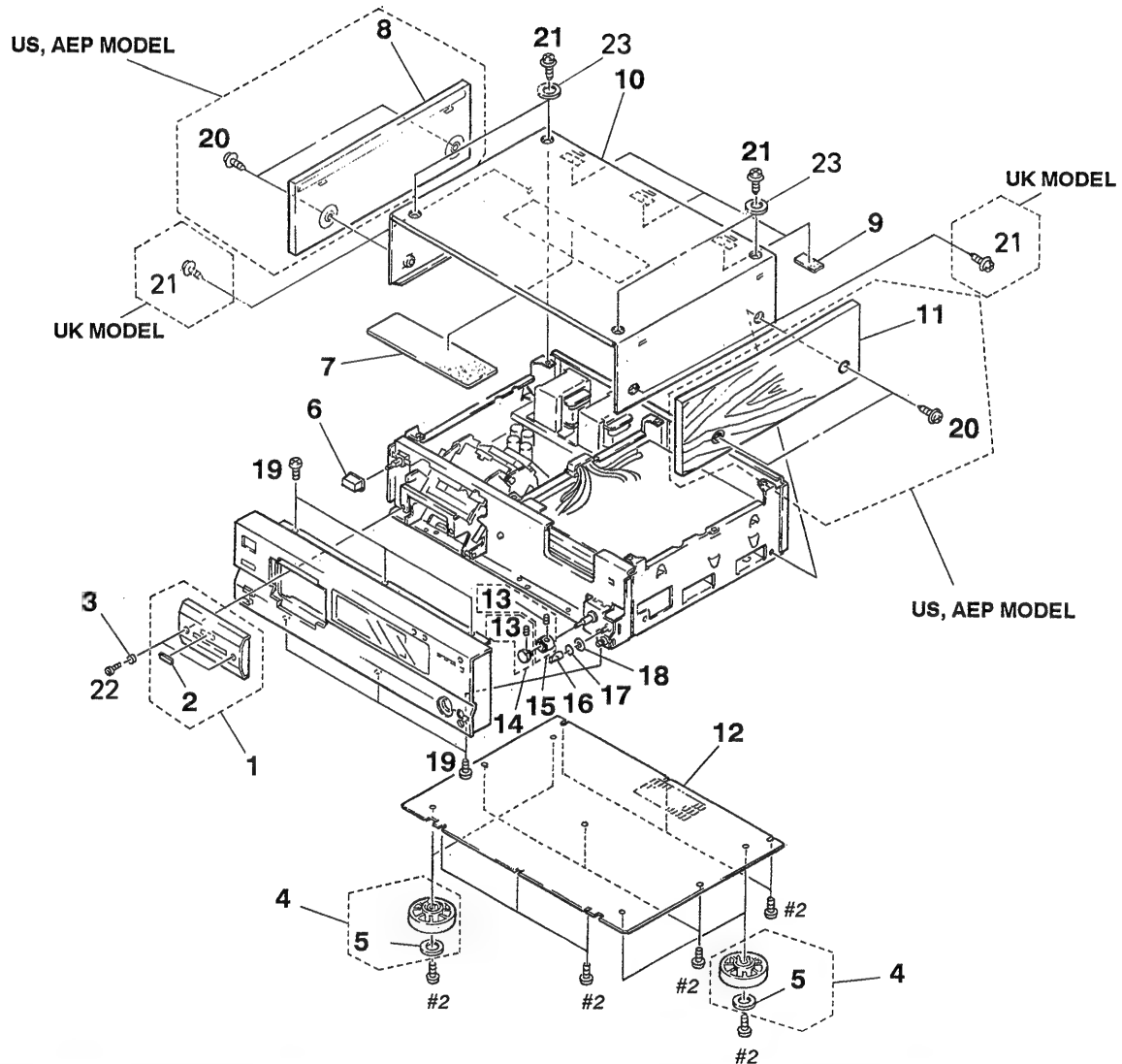
↑ ↑
Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

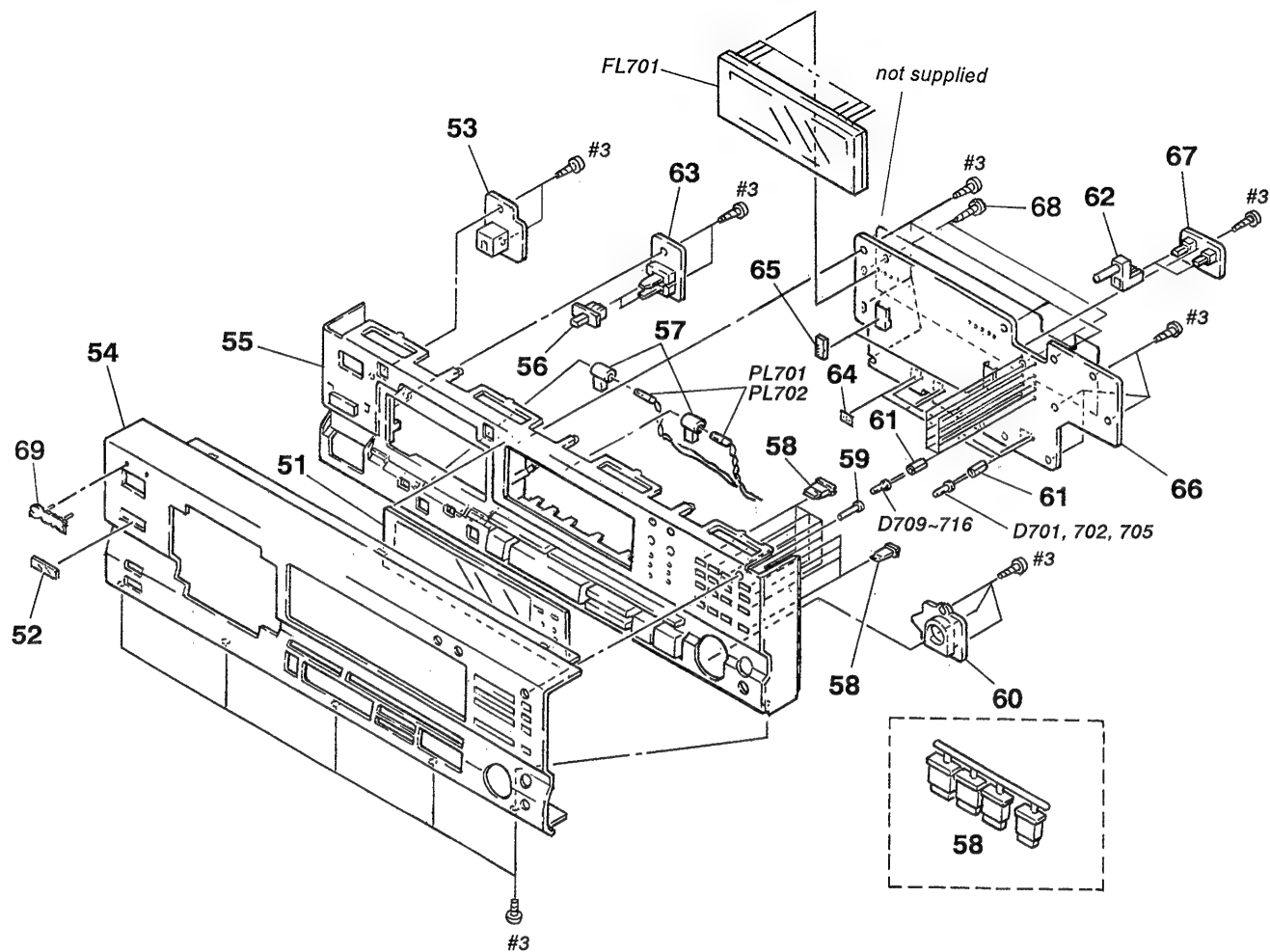
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

5-1. CABINET SECTION

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
1	A-2003-671-A	PANEL (CASSETTE) ASSY... (BLACK)		12	* 4-931-433-11	PLATE, BOTTOM	
	A-2003-903-A	PANEL (CASSETTE) ASSY... (GOLD)		13	3-701-506-01	SET SCREW, DOUBLE POINT 3X4	
2	4-936-615-01	PLATE (DAT LOGO), ORNAMENTAL... (BLACK)		14	X-3362-380-1	KNOB (REC-R) ASSY... (BLACK)	
	4-936-615-11	PLATE (DAT LOGO), ORNAMENTAL... (GOLD)			X-3363-175-1	KNOB (REC-R) ASSY... (GOLD)	
3	4-884-635-00	BASE, ORNAMENTAL... (BLACK)		15	X-3362-381-1	KNOB (REC-L) ASSY... (BLACK)	
	4-884-635-21	BASE, ORNAMENTAL... (GOLD)			X-3363-176-1	KNOB (REC-L) ASSY... (GOLD)	
4	X-3304-938-2	FOOT ASSY... (BLACK)		16	3-354-931-01	KNOB (DIA. 10)... (BLACK)	
	X-4928-110-1	FOOT ASSY... (GOLD)			3-354-931-31	KNOB (DIA. 10)... (GOLD)	
5	4-923-836-11	CUSHION		17	3-356-935-01	SPRING	
6	4-923-520-01	KNOB, POWER... (BLACK)		18	* 4-604-335-01	PLATE, BLIND (A)	
	4-923-520-12	KNOB, POWER... (GOLD)		19	3-703-685-21	SCREW (+BV 3X8)	
7	* 4-936-612-01	RUBBER (DAMPER)		20	4-933-446-01	SCREW (SIDE PANEL) (EXCEPT UK)	
8	X-3362-385-1	PANEL (L) ASSY, SIDE... (BLACK) (US, AEP)		21	3-704-366-01	SCREW (CASE) (M3X8)... (BLACK)	
	X-3363-177-1	PANEL (L) ASSY, SIDE... (GOLD)			3-704-366-11	SCREW (CASE) (M3X8)... (GOLD)	
9	3-831-441-XX	CUSHION, SPEAKER		22	7-621-996-05	BOLT, HEXAGON SOCKET 2.6X5... (BLACK)	
10	4-925-039-41	CASE... (BLACK)			4-901-727-00	BOLT (M2.6X5), HOLE, HEXAGON... (GOLD)	
	3-369-901-01	CASE... (GOLD)		23	4-928-025-41	ESCUTCHEON (TOP PLATE)... (GOLD)	
11	X-3362-386-1	PANEL (R) ASSY, SIDE... (BLACK) (US, AEP)					
	X-3363-178-1	PANEL (R) ASSY, SIDE... (GOLD)					

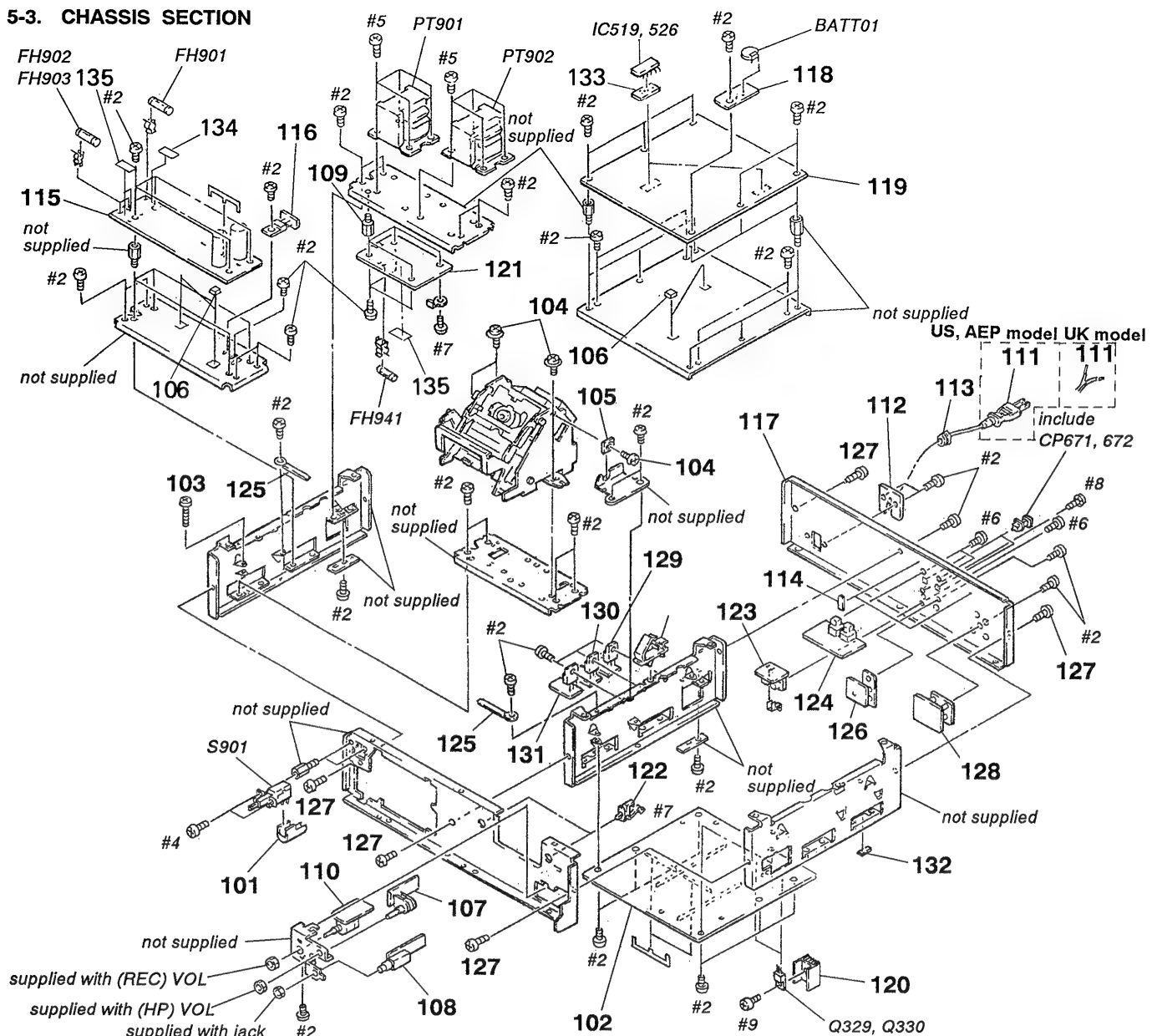
5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	3-364-924-01	WINDOW (FL TUBE)	
52	3-364-919-01	FILTER	
53	* 1-637-609-11	OPTICAL RECEIVE BOARD	
54	3-364-943-01	PANEL (FRONT)... (BLACK) (77ES: AEP)	
	3-364-943-12	PANEL (FRONT) (87ES)	
	3-364-943-21	PANEL (FRONT) (77ES: UK)	
	3-364-943-31	PANEL (FRONT)... (GOLD) (77ES: AEP)	
55	X-3362-388-1	ESCUTCHEON (PANEL) ASSY... (BLACK)	
	X-3363-174-1	ESCUTCHEON (PANEL) ASSY... (GOLD)	
56	3-307-538-21	KNOB, SWITCH, TIMER... (BLACK)	
	3-307-538-81	KNOB, SWITCH, TIMER... (GOLD)	
57	* 3-365-031-01	COVER, LAMP	
58	3-364-927-01	BUTTON (10 KEY)... (BLACK)	
	3-364-927-11	BUTTON (10 KEY)... (GOLD)	
59	4-934-031-01	BUTTON (DISPLAY)... (BLACK)	
	4-934-031-21	BUTTON (DISPLAY)... (GOLD)	

Ref. No.	Part No.	Description	Remark
60	3-364-928-01	ESCUTCHEON (R.V)... (BLACK)	
	3-364-928-11	ESCUTCHEON (R.V)... (GOLD)	
61	* 4-911-676-01	SPACER, LED	
62	4-923-879-01	BUTTON (DIA. 4)... (BLACK)	
	4-923-879-21	BUTTON (DIA. 4)... (GOLD)	
63	* 1-637-608-11	SLIDE SW BOARD	
64	3-831-441-11	CUSHION	
65	9-911-839-XX	CUSHION	
66	* A-2006-536-A	CONTROL SW BOARD, COMPLETE (US)	
	* A-2006-557-A	CONTROL SW BOARD, COMPLETE (AEP, UK)	
67	* 1-637-610-11	PUSH SW BOARD	
68	3-531-576-01	RIVET	
69	4-908-848-01	EMBLEM, SONY	
PL701	1-518-664-11	LAMP, PILOT	
PL702	1-518-664-11	LAMP, PILOT	

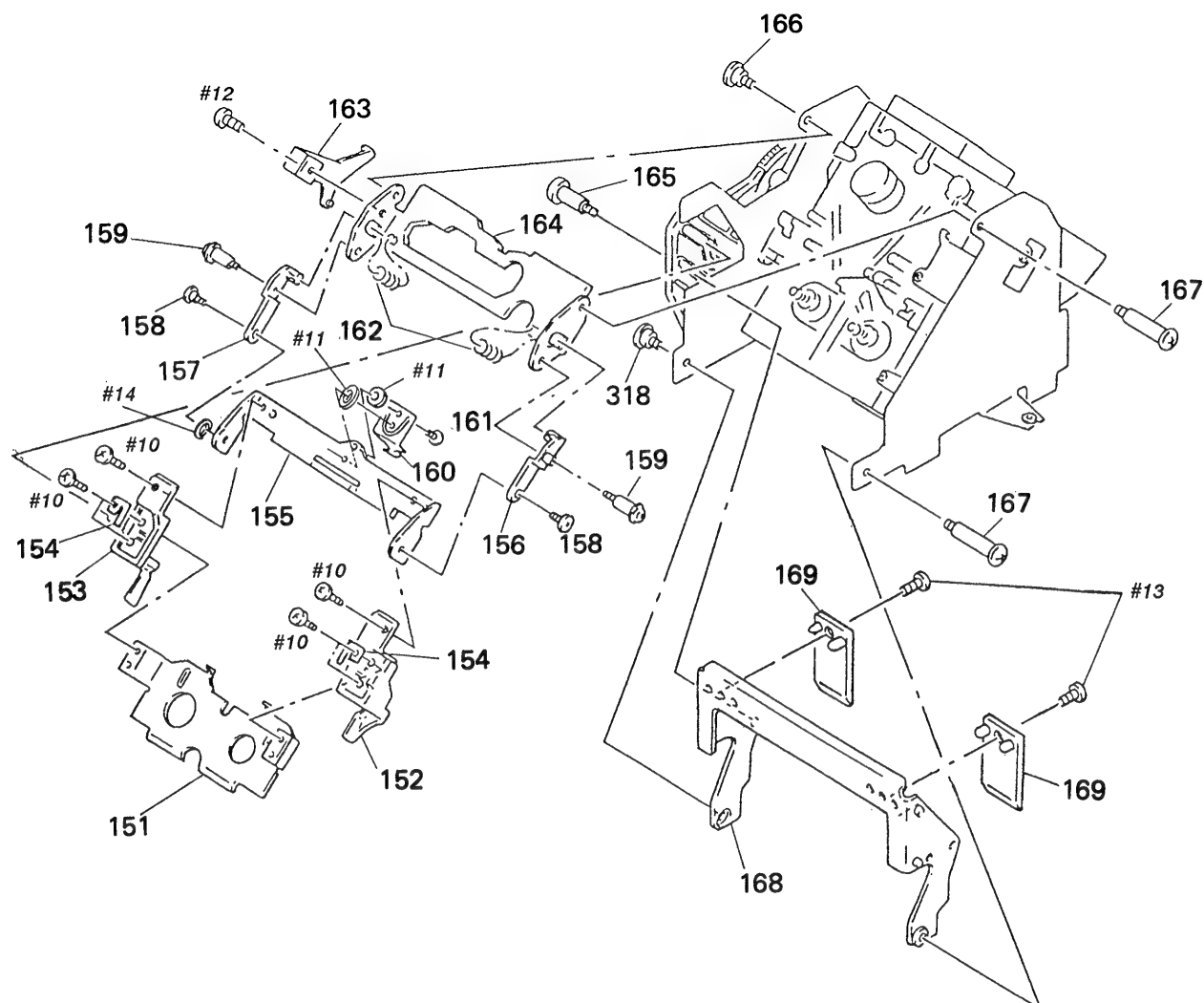
5-3. CHASSIS SECTION



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
101	3-575-524-00	COVER, POWER SWITCH		124	* 1-637-618-11	D-1/O OPT BOARD	
102	* A-2006-537-A	AUDIO BOARD, COMPLETE		125	3-703-150-11	STOPPER, WIRING	
103	3-704-242-01	SCREW, TERMINAL, +BVTP CLAW		126	* 1-637-616-11	COA IN BOARD	
104	4-886-821-11	SCREW, S TIGHT, +PTTW 3X6		127	3-703-685-21	SCREW (+BV 3X8)	
105	4-931-466-01	SPACER		128	* 1-637-620-11	LINE IN BOARD	
106	9-911-839-XX	CUSHION					
107	* 1-637-613-11	HP VOL BOARD		129	* 1-637-622-11	TR-A BOARD	
108	* 1-637-614-11	HP JACK BOARD		130	* 1-637-623-11	TR-B BOARD	
109	* 3-363-575-31	SUPPORT		131	* 1-637-624-11	TR-C BOARD	
110	* 1-637-615-11	REC VOL BOARD		132	9-911-843-XX	CUSHION, FLYWHEEL	
				133	1-543-843-11	FERRITE BOARD, MULTI HOLE	
111	△1-559-479-11	CORD, POWER (US)		134	3-701-947-16	LABEL (T3.15A) FUSE (AEP, UK)	
	△1-575-912-11	CORD, POWER (AEP)		135	* 3-701-947-14	LABEL (T2A), FUSE (AEP, UK)	
	△1-575-913-11	CORD, POWER (UK)		BATT01	△1-528-229-11	BATTERY, LITHIUM (CR-2450)	
112	* 4-923-873-01	BRACKET, CORD STOPPER		FH901	△1-532-745-11	FUSE, GLASS TUBE (3.15A 125V) (US)	
					△1-532-237-00	FUSE, TIME-LAG (T3.15A 250V) (AEP, UK)	
113	△3-703-244-00	BUSHING (2104), CORD (AEP, UK)					
	△4-916-783-01	BUSHING, CORD (US)		FH902	△1-532-203-00	FUSE, TIME-LAG (T2A 250V) (AEP, UK)	
114	4-860-518-00	PAPER, VIBRATION PROOF (E)			△1-532-743-11	FUSE, GLASS TUBE (2A, 125V) (US)	
115	* A-2006-344-A	POWER BOARD, COMPLETE		FH903	△1-532-203-00	FUSE, TIME-LAG (T2A 125V) (AEP, UK)	
					△1-532-743-11	FUSE, GLASS TUBE (2A, 250V) (US)	
116	* 1-637-625-11	DIODE BOARD					
117	* 3-364-938-11	PANEL, BACK (87ES)		FH941	△1-532-743-11	FUSE, GLASS TUBE (2A, 125V) (US)	
	* 3-364-938-31	PANEL, BACK (77ES: UK)			△1-532-203-00	FUSE, TIME-LAG (T2A 250V) (AEP, UK)	
	* 3-364-938-41	PANEL, BACK (77ES: AEP)		PT901	△1-450-450-11	TRANSFORMER, POWER (D) (US)	
118	* 1-637-626-11	BATTERY BOARD			△1-450-603-11	TRANSFORMER, POWER (AEP, UK)	
119	* A-2006-587-A	DIGITAL BOARD, COMPLETE		PT902	△1-450-449-11	TRANSFORMER, POWER (A) (US)	
120	* 4-931-401-01	HEAT SINK, V. OUT			△1-450-604-11	TRANSFORMER, POWER (A) (AEP, UK)	
121	* 1-637-621-11	LINE FILTER BOARD		S901	△1-554-920-11	SWITCH, PUSH (AC POWER) (1 KEY)	
122	* 3-329-937-02	CLIP, WIRE					
123	* 1-637-617-11	DIGITAL OUT BOARD					

Note: The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

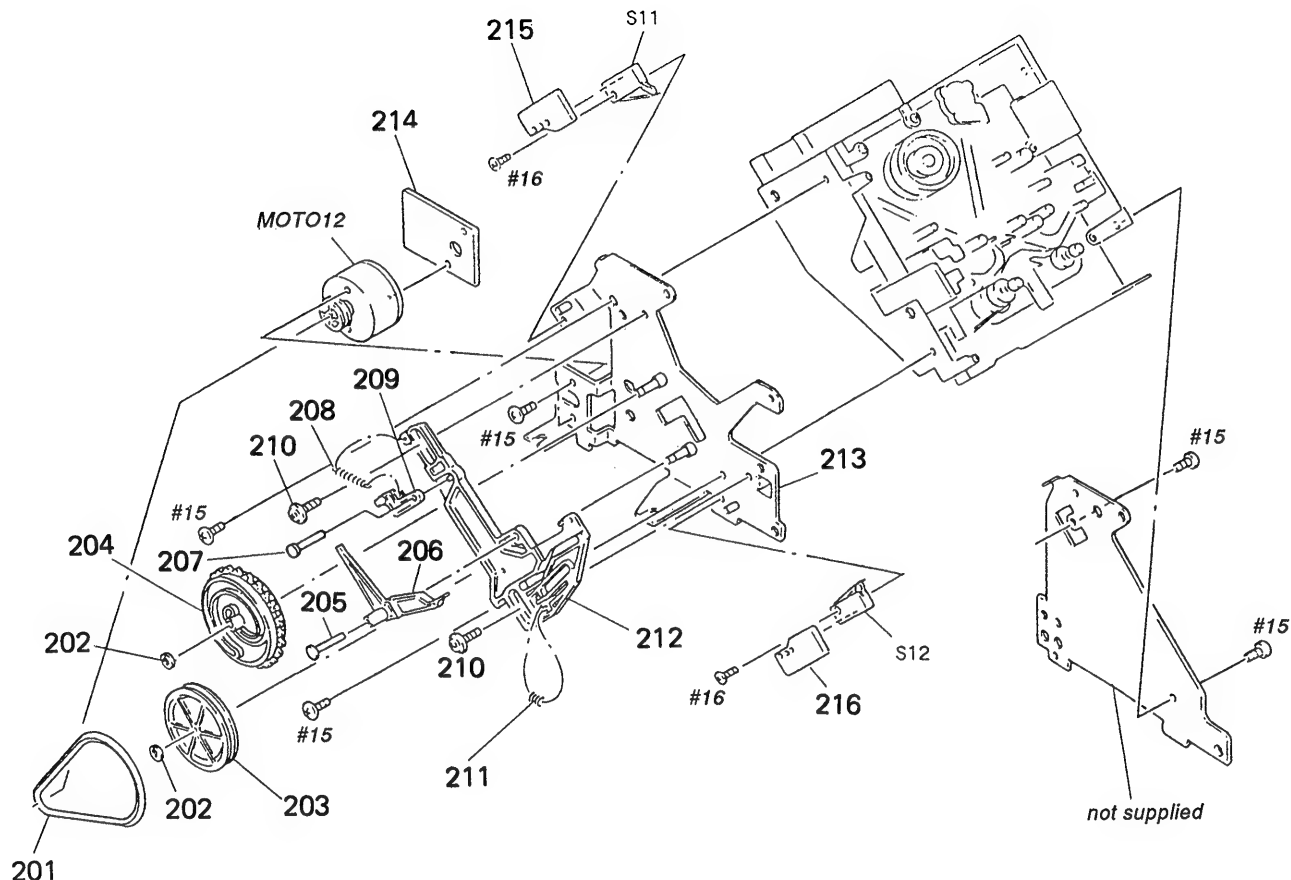
5-4. MECHANISM SECTION 1



Ref. No.	Part No.	Description
151	4-931-476-01	HOLDER (LOWER)
152	4-931-486-01	HOLDER (C-RIGHT)
153	4-931-484-01	HOLDER (C-LEFT)
154	3-366-308-01	SPRING (SIDE), PLATE
155	* 4-931-485-01	HOLDER (C-INNER)
156	4-931-481-01	ARM (LIMITER L)
157	4-931-473-01	ARM (LIMITER R)
158	3-312-161-00	SCREW, STEP, PRECISION
159	4-918-991-01	SCREW, STEP
160	4-931-461-01	SPRING (CENTER), LEAF

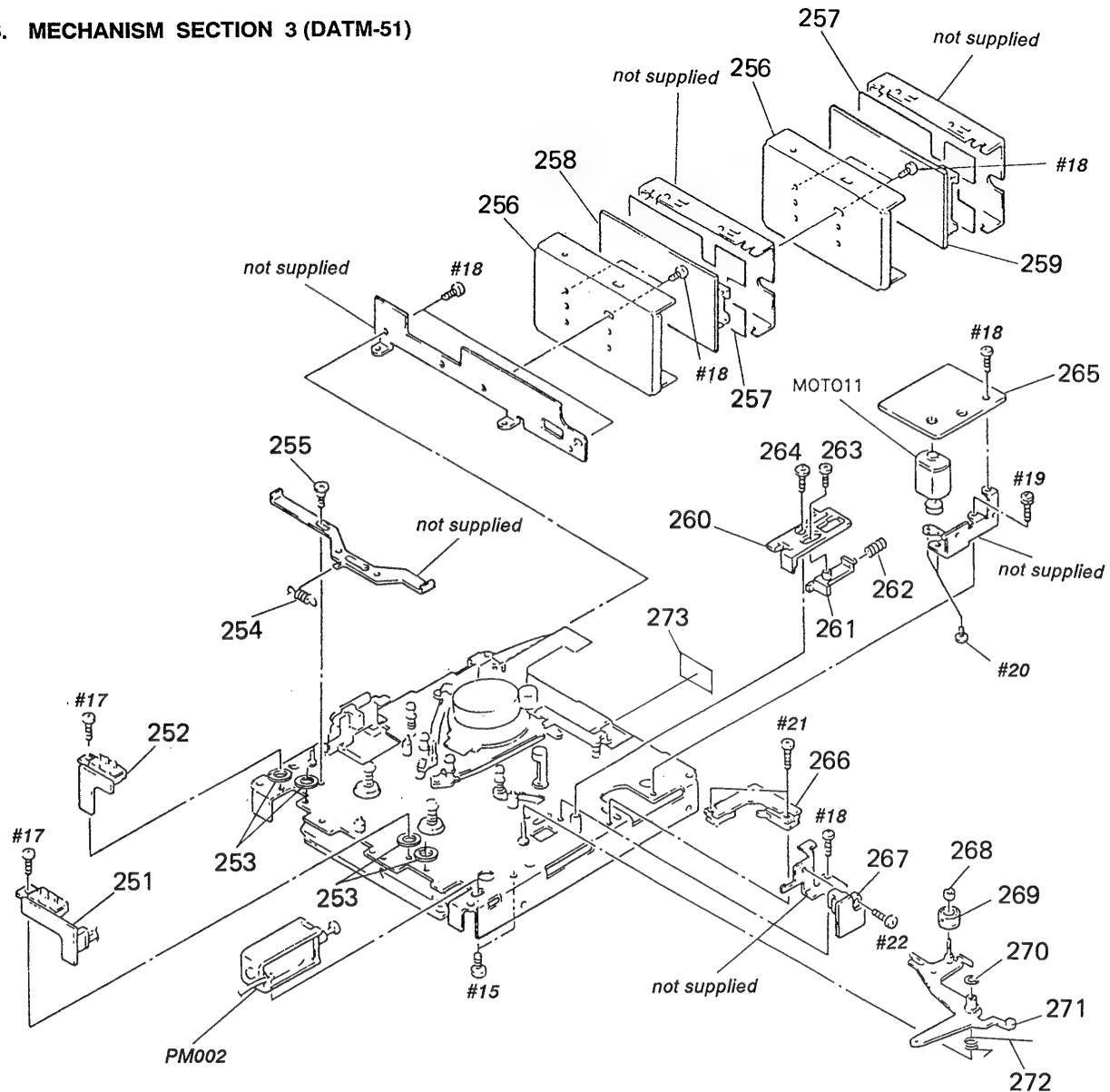
Ref. No.	Part No.	Description	Remark
161	3-352-517-01	SCREW (M2X2.5)	
162	3-537-214-00	SPRING, COMPRESSION	
163	* X-3362-941-1	JOINT ASSY	
164	3-369-235-01	PLATE, FULCRUM	
165	4-931-471-01	SCREW (STEP)	
166	2-236-956-00	SCREW, STEP	
167	4-931-463-01	SCREW (STEP)	
168	4-931-474-01	HOLDER (WINDOW)	
169	4-931-469-01	PLATE, ORNAMENTAL	

5-5. MECHANISM SECTION 2



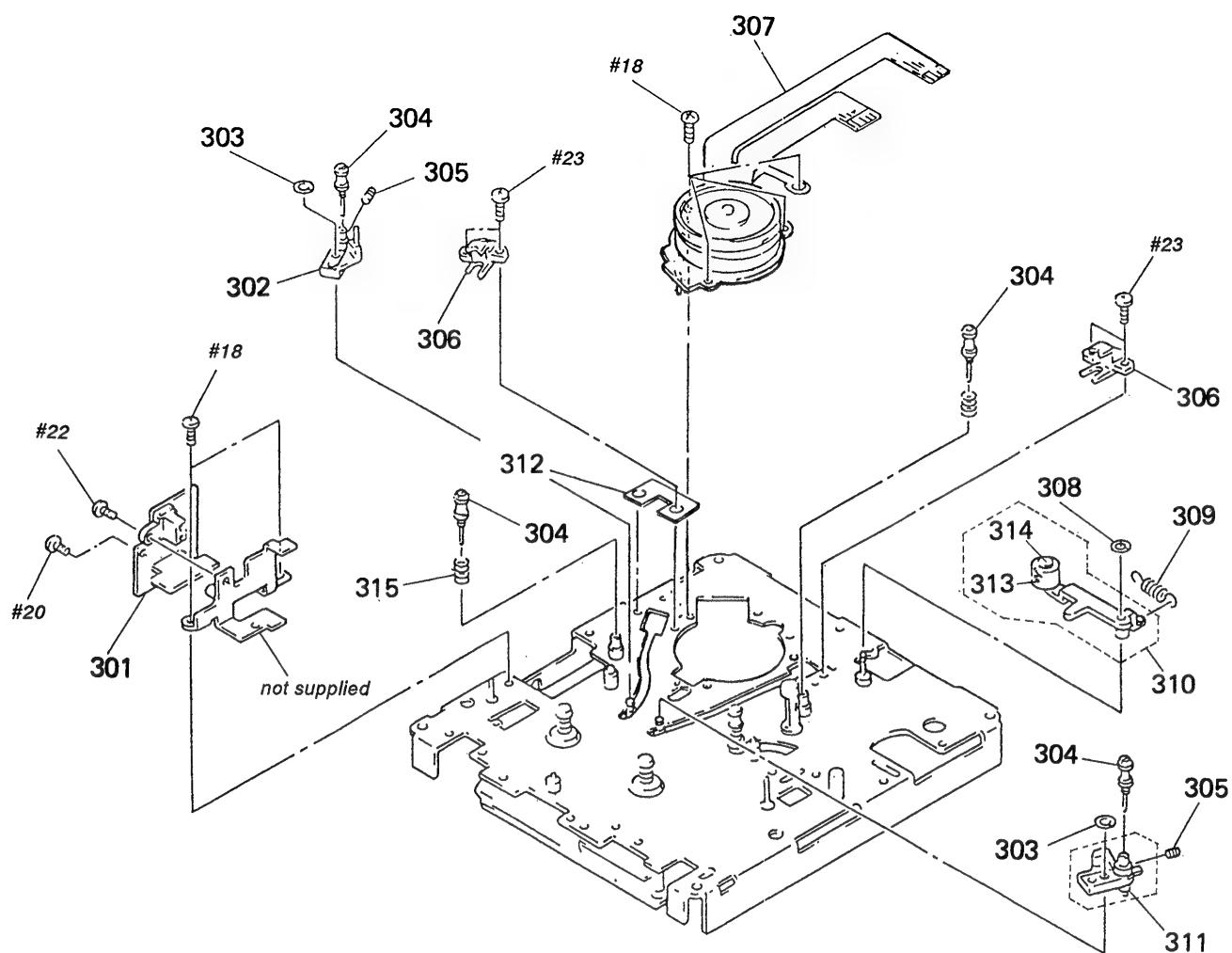
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	4-931-470-01	BELT (DRIVING)		210	4-932-336-01	SCREW (STEP)	
202	3-307-948-21	WASHER, NYLON		211	3-537-215-00	SPRING, COMPRESSION	
203	4-931-459-01	PULLEY		212	4-931-492-01	SLIDER (CAM)	
204	4-931-477-01	GEAR (CAM)		213	* X-4919-023-4	PLATE ASSY, SIDE	
205	4-931-468-01	SHAFT (PRESS FITTING)		214	* 1-633-726-11	PC BOARD, MOTOR	
206	4-931-490-01	LEVER (LINK)		215	* 1-633-727-11	PC BOARD, SW(IN)	
207	4-936-626-01	SHAFT (ARM PRESS FITTING)		216	* 1-633-728-11	PC BOARD, SW(OUT)	
208	3-549-810-00	SPRING, TENSION		MOTO12	A-2003-448-A	MOTOR ASSY (CASSETTE COMPARTMENT)	
209	4-931-460-01	ARM (SLIDER)					

5-6. MECHANISM SECTION 3 (DATM-51)



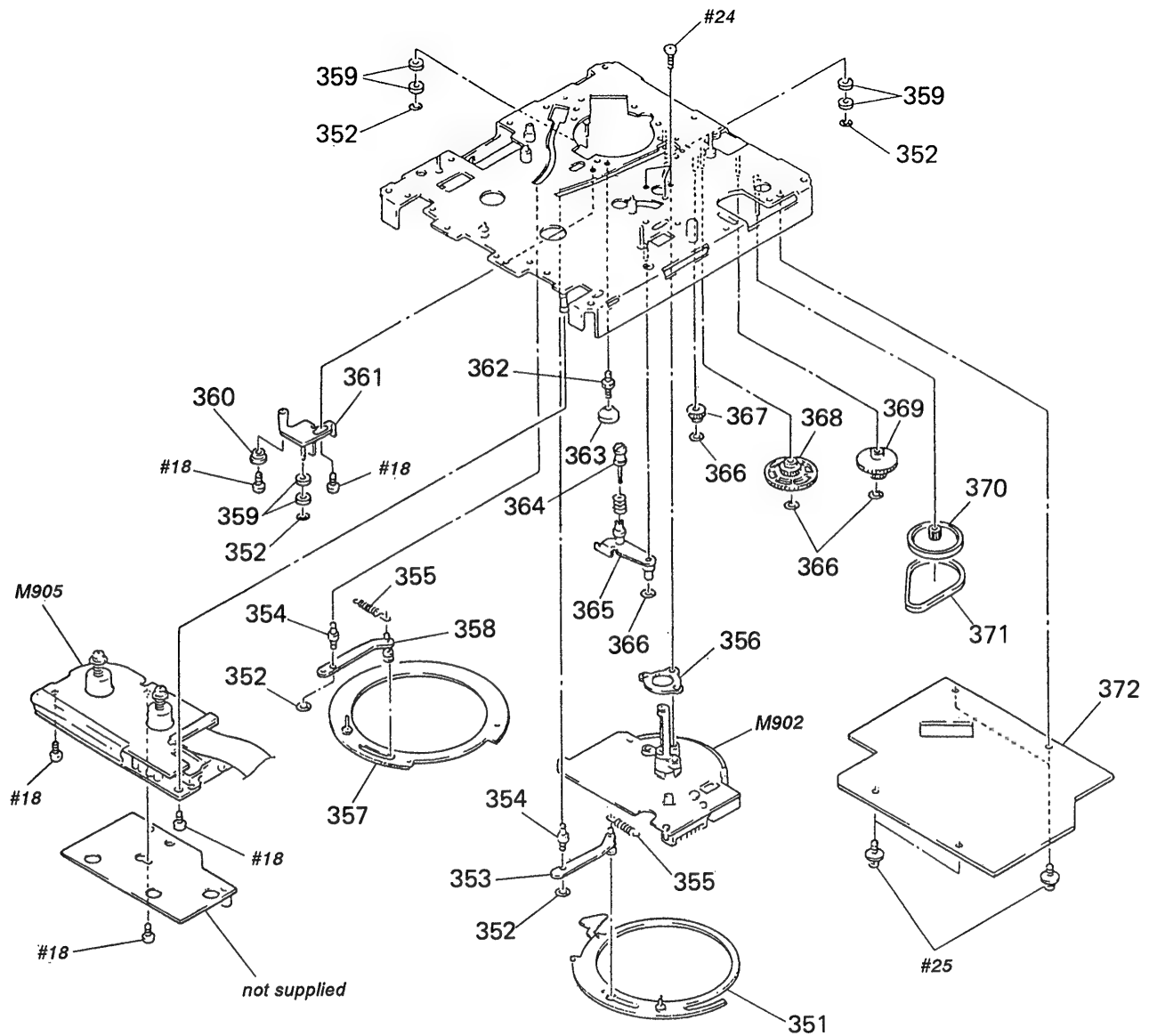
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
251	* 1-637-605-11	T-SW BOARD		264	3-703-502-11	SCREW	
252	* 1-637-604-11	S-SW BOARD		265	* 1-637-601-11	LOADING MOTOR BOARD	
253	3-344-781-01	WASHER, POLYETHYLENE		266	* 1-637-606-11	LOAD-SW BOARD	
254	3-307-375-00	SPRING, TENSION		267	* 1-637-603-11	T-END BOARD	
255	3-312-161-00	SCREW, STEP, PRECISION		268	3-337-626-01	CAP, PINCH ROLLER	
256	* 3-337-686-11	CASE (LOWER), SHIELD		269	X-3337-610-1	PINCH ROLLER ASSY	
257	* 3-362-537-01	SHEET (RF)		270	3-701-436-11	WASHER, STOPPER	
258	* A-2006-207-A	AMPLIFIER BOARD, COMPLETE		271	X-3362-021-1	LEVER (PINCH ROLLER) ASSY	
259	* A-2006-206-A	AMPLIFIER BOARD, COMPLETE		272	3-367-352-01	SPRING (PINCH)	
260	3-362-148-01	SLIDER (PINCH)		273	3-366-886-01	SHEET (RF BRACKET)	
261	3-362-149-01	SLIDER (LIMITER)		MOTO11	A-2003-660-A	MOTOR ASSY (LOADING)	
262	3-564-035-00	SPRING, COMPRESSION		PM002	1-454-522-11	SOLENOID, PLUNGER	
263	2-623-756-01	SCREW, (B1.7X3), TAPPING					

5-7. MECHANISM SECTION 4 (DATM-51)



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
301	* 1-637-602-11	S-END BOARD		309	3-307-375-00	SPRING, TENSION	
302	X-3362-028-1	SLANT BLOCK (L2) ASSY		310	A-2003-487-A	ARM (CLEANING) ASSY	
303	3-325-698-01	RING, RETAINING		311	X-3362-029-1	SLANT BLOCK (R2) ASSY	
304	X-3362-027-1	GUIDE ASSY, ROLLER		312	3-701-437-01	SHEET (CATCHER)	
305	3-362-152-01	SCREW (RETURN GUIDE BOSS)		313	3-352-518-01	ROLLER (CLEANER)	
306	* 3-337-685-01	CATCHER		314	3-353-812-01	COLLAR (ROLLER)	
307	8-848-549-11	DRUM ASSY DOU-15A-R		315	3-573-470-00	SPRING, COMPRESSION	
308	3-701-436-11	WASHER, STOPPER					

5-8. MECHANISM SECTION 5 (DATM-51)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
351	X-3362-204-1	GEAR (LOAD) ASSY		364	X-3362-027-1	GUIDE ASSY, ROLLER	
352	3-559-408-11	WASHER, POLYETHYLENE, DIA. 1.2		365	* X-3362-020-1	LEVER (F GUIDE) ASSY	
353	* X-3362-025-1	LEVER (LOADING R) ASSY		366	3-701-436-11	WASHER, STOPPER	
354	3-362-151-01	BOSS (GUIDE)		367	3-345-182-01	GEAR (LOADING B)	
355	3-337-653-01	SPRING, TENSION		368	3-345-181-01	GEAR (LOADING A)	
356	* 3-362-156-01	BRACKET (CAPSTAN)		369	3-362-155-01	GEAR (A)	
357	X-3337-602-1	RING (LEFT) ASSY, LOADING		370	4-932-338-01	PULLEY (A)	
358	* X-3362-024-1	LEVER (LOADING L) ASSY		371	4-913-325-01	BELT, TAKE-UP	
359	3-337-622-01	ROLLER, RING		372	* A-2006-382-A	MD BOARD, COMPLETE	
360	* 3-362-158-01	COLLAR (RING ADJUSTMENT)		M902	8-835-306-01	MOTOR, DC U-17A	
361	* X-3362-023-1	ARM (RING ROLLER) ASSY		M905	* 8-835-205-01	MOTOR, DC U-2A	
362	* 3-362-159-01	SHAFT (RING ADJUSTMENT)					
363	3-362-160-01	NUT (RING ADJUSTMENT)					

SECTION 6

ELECTRICAL PARTS LIST

RF AMP (REC/PB)

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When including parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* A-2006-206-A RF AMP (REC/PB) BOARD, COMPLETE *****				< CONNECTOR >			
		< CAPACITOR >		CN951	1-569-349-11	CONNECTOR, F.P.C 6P	
				CN952	* 1-564-728-11	PIN, CONNECTOR (SMALL TYPE)12P	
				< IC >			
C951	1-164-005-11	CERAMIC CHIP 0.47uF	25V	IC951	8-752-032-26	IC CXA1045Q-Z	
C953	1-163-038-00	CERAMIC CHIP 0.1uF	25V	< COIL >			
C954	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	L951	1-408-777-00	INDUCTOR CHIP 10uH	
C955	1-164-005-11	CERAMIC CHIP 0.47uF	25V	L952	1-408-791-00	INDUCTOR CHIP 150uH	
C956	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	L953	1-408-791-00	INDUCTOR CHIP 150uH	
				< RESISTOR >			
C957	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R951	1-216-056-00	METAL GLAZE 2K	5% 1/10W
C958	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	R952	1-216-056-00	METAL GLAZE 2K	5% 1/10W
C959	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	R953	1-216-057-00	METAL CHIP 2.2K	5% 1/10W
C960	1-163-011-11	CERAMIC CHIP 0.0015uF	10% 50V	R954	1-216-057-00	METAL CHIP 2.2K	5% 1/10W
C961	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R955	1-216-089-00	METAL CHIP 47K	5% 1/10W
				R956	1-216-083-00	METAL CHIP 27K	5% 1/10W
C962	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	R957	1-216-063-00	METAL CHIP 3.9K	5% 1/10W
C963	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R958	1-216-085-00	METAL CHIP 33K	5% 1/10W
C965	1-164-298-11	CERAMIC CHIP 0.15uF	10% 25V	R959	1-216-067-00	METAL CHIP 5.6K	5% 1/10W
C966	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R960	1-216-079-00	METAL CHIP 18K	5% 1/10W
C967	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	R961	1-216-079-00	METAL CHIP 18K	5% 1/10W
				R962	1-216-067-00	METAL CHIP 5.6K	5% 1/10W
C968	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R963	1-216-085-00	METAL CHIP 33K	5% 1/10W
C969	1-164-005-11	CERAMIC CHIP 0.47uF	25V	R964	1-216-083-00	METAL CHIP 27K	5% 1/10W
C971	1-164-298-11	CERAMIC CHIP 0.15uF	10% 25V	R965	1-216-063-00	METAL CHIP 3.9K	5% 1/10W
C973	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R966	1-216-089-00	METAL CHIP 47K	5% 1/10W
C974	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	R967	1-216-089-00	METAL CHIP 47K	5% 1/10W
				R968	1-216-089-00	METAL CHIP 47K	5% 1/10W
C975	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R969	1-216-075-00	METAL CHIP 12K	5% 1/10W
C976	1-163-011-11	CERAMIC CHIP 0.0015uF	10% 50V	R970	1-216-082-00	METAL GLAZE 24K	5% 1/10W
C977	1-163-020-00	CERAMIC CHIP 0.0082uF	10% 50V	R971	1-216-748-11	METAL CHIP 39K	5% 1/10W
C978	1-162-638-11	CERAMIC CHIP 1uF	16V	R972	1-216-295-00	METAL CHIP 0	5% 1/10W
C979	1-163-020-00	CERAMIC CHIP 0.0082uF	10% 50V	R973	1-216-073-00	METAL CHIP 10K	5% 1/10W
				R974	1-216-073-00	METAL CHIP 10K	5% 1/10W
C980	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V				
C981	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V				
C982	1-163-005-11	CERAMIC CHIP 470PF	10% 50V				
C983	1-164-232-11	CERAMIC CHIP 0.01uF	50V				
C984	1-163-005-11	CERAMIC CHIP 470PF	10% 50V				
C985	1-163-005-11	CERAMIC CHIP 470PF	10% 50V				

RF AMP (REC/PB)

RF AMP (PB)

AUDIO

Ref.No.	Part No.	Description	Remark
< VARIABLE RESISTOR >			
RV951	1-238-237-11	RES, ADJ, CERMET 470	
RV952	1-238-237-11	RES, ADJ, CERMET 470	

* A-2006-207-A RF AMP (PB) BOARD, COMPLETE			

< CAPACITOR >			
C51	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C52	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C53	1-162-638-11	CERAMIC CHIP 1uF 16V	
C54	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C55	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C57	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C58	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C59	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C60	1-162-638-11	CERAMIC CHIP 1uF 16V	
C61	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C62	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C63	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C64	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C66	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C69	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C70	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C71	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C72	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
< CONNECTOR >			
CN51	1-569-349-11	CONNECTOR, F.P.C 6P	
CN52	* 1-564-725-11	PIN, CONNECTOR (SMALL TYPE) 9P	
< IC >			
IC51	8-752-039-01	IC CXA1364R	
< COIL >			
L51	1-408-781-00	INDUCTOR, CHIP 22uH	
L52	1-408-789-21	INDUCTOR, CHIP 100uH	
L53	1-408-781-00	INDUCTOR, CHIP 22uH	
< TRANSISTOR >			
Q51	8-729-901-01	TRANSISTOR DTC144EK	
Q52	8-729-901-01	TRANSISTOR DTC144EK	
Q53	8-729-901-01	TRANSISTOR DTC144EK	
Q54	8-729-901-01	TRANSISTOR DTC144EK	
Q55	8-729-901-01	TRANSISTOR DTC144EK	

Ref.No.	Part No.	Description	Remark
< RESISTOR >			
R51	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R52	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R53	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R54	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R55	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R56	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R57	1-216-084-00	METAL GLAZE 30K 5% 1/10W	
R58	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R59	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R60	1-216-748-11	METAL CHIP 39K 5% 1/10W	
R61	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R62	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R63	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	

* A-2006-537-A AUDIO BOARD, COMPLETE			

1-568-129-11 BAR, BUS 8P			
* 1-568-130-11 BAR, BUS 3P			
7-682-147-15 SCREW, TR			
* 3-346-266-12 PLATE, GROUND			
* 4-931-401-01 HEAT SINK, V. OUT			
< CAPACITOR >			
C101	1-124-915-11	ELECT 10uF 20% 63V	
C102	1-136-153-00	FILM 0.01uF 5% 50V	
C103	1-136-153-00	FILM 0.01uF 5% 50V	
C167	1-136-811-11	FILM 330PF 5% 100V	
C168	1-136-811-11	FILM 330PF 5% 100V	
C169	1-136-810-11	FILM 220PF 5% 100V	
C170	1-136-810-11	FILM 220PF 5% 100V	
C171	1-136-234-11	FILM 0.0062uF 3% 100V	
C172	1-136-808-11	FILM 100PF 5% 100V	
C173	1-136-234-11	FILM 0.0062uF 3% 100V	
C174	1-136-808-11	FILM 100PF 5% 100V	
C175	1-136-228-11	FILM 0.0012uF 3% 100V	
C176	1-136-233-11	FILM 0.0047uF 3% 100V	
C177	1-124-918-11	ELECT 47uF 20% 63V	
C178	1-109-621-00	MICA 220PF 500V	
C201	1-124-915-11	ELECT 10uF 20% 63V	
C202	1-136-153-00	FILM 0.01uF 5% 50V	
C203	1-136-153-00	FILM 0.01uF 5% 50V	
C267	1-136-811-11	FILM 330PF 5% 100V	
C268	1-136-811-11	FILM 330PF 5% 100V	
C269	1-136-810-11	FILM 220PF 5% 100V	
C270	1-136-810-11	FILM 220PF 5% 100V	
C271	1-136-234-11	FILM 0.0062uF 3% 100V	
C272	1-136-808-11	FILM 100PF 5% 100V	
C273	1-136-234-11	FILM 0.0062uF 3% 100V	

AUDIO

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C274	1-136-808-11	FILM	100PF	5%	100V	C354	1-124-122-11	ELECT	100uF	20%	50V
C275	1-136-228-11	FILM	0.0012uF	3%	100V	C355	1-136-165-00	FILM	0.1uF	5%	50V
C276	1-136-233-11	FILM	0.0047uF	3%	100V	C356	1-136-165-00	FILM	0.1uF	5%	50V
C277	1-124-918-11	ELECT	47uF	20%	63V	C357	1-124-122-11	ELECT	100uF	20%	50V
C278	1-109-621-00	MICA	220PF	1%	500V	C358	1-136-165-00	FILM	0.1uF	5%	50V
C301	1-124-915-11	ELECT	10uF	20%	63V	C359	1-124-122-11	ELECT	100uF	20%	50V
C302	1-136-165-00	FILM	0.1uF	5%	50V	C360	1-136-165-00	FILM	0.1uF	5%	50V
C303	1-136-165-00	FILM	0.1uF	5%	50V	C361	1-124-122-11	ELECT	100uF	20%	50V
C304	1-136-165-00	FILM	0.1uF	5%	50V	C362	1-136-165-00	FILM	0.1uF	5%	50V
C305	1-136-165-00	FILM	0.1uF	5%	50V	C363	1-136-153-00	FILM	0.01uF	5%	50V
C306	1-124-484-11	ELECT	220uF	20%	35V	C364	1-162-284-31	CERAMIC	150PF	10%	50V
C307	1-124-484-11	ELECT	220uF	20%	35V	C365	1-162-199-31	CERAMIC	10PF	5%	50V
C310	1-124-713-11	ELECT	470uF	20%	35V	C366	1-124-122-11	ELECT	100uF	20%	50V
C311	1-136-165-00	FILM	0.1uF	5%	50V	C367	1-162-211-31	CERAMIC	33PF	5%	50V
C312	1-124-713-11	ELECT	470uF	20%	35V	C368	1-162-199-31	CERAMIC	10PF	5%	50V
C313	1-136-165-00	FILM	0.1uF	5%	50V	C370	1-136-157-00	FILM	0.022uF	5%	50V
C314	1-124-484-11	ELECT	220uF	20%	35V	C371	1-136-165-00	FILM	0.1uF	5%	50V
C315	1-136-165-00	FILM	0.1uF	5%	50V	C372	1-136-165-00	FILM	0.1uF	5%	50V
C316	1-136-165-00	FILM	0.1uF	5%	50V	C373	1-136-157-00	FILM	0.022uF	5%	50V
C317	1-124-918-11	ELECT	47uF	20%	63V	C374	1-136-177-00	FILM	1uF	5%	50V
C318	1-136-165-00	FILM	0.1uF	5%	50V	C375	1-136-165-00	FILM	0.1uF	5%	50V
C319	1-136-165-00	FILM	0.1uF	5%	50V	C376	1-124-484-11	ELECT	220uF	20%	35V
C320	1-136-165-00	FILM	0.1uF	5%	50V	C377	1-124-484-11	ELECT	220uF	20%	35V
C325	1-124-517-11	ELECT	470uF	20%	50V	C378	1-124-713-11	ELECT	470uF	20%	35V
C326	1-124-517-11	ELECT	470uF	20%	50V	C379	1-124-713-11	ELECT	470uF	20%	35V
C327	1-124-130-00	ELECT	100uF	20%	63V	C380	1-124-915-11	ELECT	10uF	20%	63V
C328	1-124-130-00	ELECT	100uF	20%	63V	C381	1-124-713-11	ELECT	470uF	20%	35V
C329	1-107-210-00	MICA	22PF	5%	500V	C382	1-136-165-00	FILM	0.1uF	5%	50V
C330	1-107-210-00	MICA	22PF	5%	500V	C383	1-136-165-00	FILM	0.1uF	5%	50V
C331	1-124-922-11	ELECT	1000uF	20%	63V	C384	1-136-165-00	FILM	0.1uF	5%	50V
C332	1-124-922-11	ELECT	1000uF	20%	63V	C385	1-136-165-00	FILM	0.1uF	5%	50V
C333	1-124-484-11	ELECT	220uF	20%	35V	C386	1-124-484-11	ELECT	220uF	20%	35V
C334	1-136-165-00	FILM	0.1uF	5%	50V	C387	1-124-484-11	ELECT	220uF	20%	35V
C337	1-124-122-11	ELECT	100uF	20%	50V	C389	1-124-122-11	ELECT	100uF	20%	50V
C338	1-136-165-00	FILM	0.1uF	5%	50V	C390	1-136-157-00	FILM	0.022uF	5%	50V
C339	1-136-165-00	FILM	0.1uF	5%	50V	C391	1-136-177-00	FILM	1uF	5%	50V
C340	1-136-165-00	FILM	0.1uF	5%	50V	C392	1-136-165-00	FILM	0.1uF	5%	50V
C341	1-124-122-11	ELECT	100uF	20%	50V	C393	1-136-165-00	FILM	0.1uF	5%	50V
C342	1-136-165-00	FILM	0.1uF	5%	50V	C394	1-136-165-00	FILM	0.1uF	5%	50V
C343	1-136-165-00	FILM	0.1uF	5%	50V	C395	1-162-179-11	CERAMIC	0.1uF		50V
C344	1-124-122-11	ELECT	100uF	20%	50V	< CONNECTOR >					
C345	1-136-165-00	FILM	0.1uF	5%	50V	CN96	* 1-564-506-11	PLUG, CONNECTOR 3P			
C346	1-124-122-11	ELECT	100uF	20%	50V	CN101	* 1-564-505-11	PLUG, CONNECTOR 2P			
C347	1-136-165-00	FILM	0.1uF	5%	50V	CN102	* 1-564-505-11	PLUG, CONNECTOR 2P			
C348	1-124-122-11	ELECT	100uF	20%	50V	CN103	* 1-564-506-11	PLUG, CONNECTOR 3P			
C349	1-136-165-00	FILM	0.1uF	5%	50V	CN104	* 1-564-505-11	PLUG, CONNECTOR 2P			
C350	1-124-122-11	ELECT	100uF	20%	50V	CN201	* 1-564-505-11	PLUG, CONNECTOR 2P			
C351	1-136-165-00	FILM	0.1uF	5%	50V	CN202	* 1-564-505-11	PLUG, CONNECTOR 2P			
C352	1-136-165-00	FILM	0.1uF	5%	50V	CN203	* 1-564-506-11	PLUG, CONNECTOR 3P			
C353	1-136-165-00	FILM	0.1uF	5%	50V	CN204	* 1-564-505-11	PLUG, CONNECTOR 2P			

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
CN351	* 1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P				< COIL >	
CN352	* 1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P					
		< DIODE >					
D101	8-719-107-94	DIODE 1SS202-1		L351	1-410-324-11	INDUCTOR 4.7uH	
D102	8-719-107-94	DIODE 1SS202-1		L352	1-460-042-11	COIL (WITH CORE)	
D201	8-719-107-94	DIODE 1SS202-1		L353	1-460-042-11	COIL (WITH CORE)	
D202	8-719-107-94	DIODE 1SS202-1		L355	1-410-324-11	INDUCTOR 4.7uH	
D325	8-719-902-87	DIODE EQB01-08Q				< TRANSISTOR >	
D326	8-719-902-87	DIODE EQB01-08Q		Q325	8-729-204-90	TRANSISTOR 2SK246-GR1	
D349	8-719-200-77	DIODE 10E2N		Q326	8-729-204-90	TRANSISTOR 2SK246-GR1	
D350	8-719-114-30	DIODE RD5.1JSB2		Q327	8-729-803-82	TRANSISTOR 2SC3468-E	
D351	8-719-901-59	DIODE KV1320		Q328	8-729-803-76	TRANSISTOR 2SA1371-E	
D352	8-719-903-27	DIODE 1SS168		Q329	8-729-127-53	TRANSISTOR 2SC2275-P	
D353	8-719-107-94	DIODE 1SS202-1		Q330	8-729-190-53	TRANSISTOR 2SA985A-P	
D354	8-719-107-94	DIODE 1SS202-1		Q331	8-729-803-76	TRANSISTOR 2SA1371-E	
D355	8-719-107-94	DIODE 1SS202-1		Q332	8-729-803-82	TRANSISTOR 2SC3468-E	
D356	8-719-107-94	DIODE 1SS202-1		Q333	8-729-803-82	TRANSISTOR 2SC3468-E	
D357	8-719-200-82	DIODE 11ES2		Q334	8-729-803-76	TRANSISTOR 2SA1371-E	
D358	8-719-200-82	DIODE 11ES2		Q350	8-729-127-53	TRANSISTOR 2SC2275-P	
D359	8-719-107-94	DIODE 1SS202-1		Q351	8-729-900-61	TRANSISTOR DTA114ES	
		< IC >		Q352	8-729-200-56	TRANSISTOR 2SK241-GR	
				Q353	8-729-200-56	TRANSISTOR 2SK241-GR	
IC101	8-759-602-83	IC M5238P		Q354	8-729-900-61	TRANSISTOR DTA114ES	
IC102	8-759-504-50	IC LF412CN/SL161841					
IC151	8-759-900-72	IC NE5532P		Q355	8-729-900-80	TRANSISTOR DTC114ES	
IC152	8-759-900-72	IC NE5532P		Q356	8-729-900-61	TRANSISTOR DTA114ES	
IC153	8-759-981-98	IC RC4560DD		Q357	8-729-900-80	TRANSISTOR DTC114ES	
				Q358	8-729-900-80	TRANSISTOR DTC114ES	
				Q359	8-729-900-61	TRANSISTOR DTA114ES	
						< RESISTOR >	
IC201	8-759-602-83	IC M5238P					
IC202	8-759-504-50	IC LF412CN/SL161841		R103	1-246-545-00	CARBON 1.0M 5% 1/4W	
IC251	8-759-900-72	IC NE5532P		R104	1-247-717-11	CARBON 2.2K 5% 1/4W	
IC252	8-759-900-72	IC NE5532P		R105	1-249-462-11	CARBON 22K 5% 1/4W	
IC253	8-759-981-98	IC RC4560DD		R106	1-249-469-11	CARBON 100K 5% 1/4W	
				R107	1-249-520-11	CARBON 47 5% 1/4W	
IC301	8-759-231-53	IC TA7805S					
IC302	8-759-604-47	IC M5F7905L		R108	1-249-512-11	CARBON 22 5% 1/4W	
IC303	8-759-231-53	IC TA7805S		R109	1-249-524-11	CARBON 68 5% 1/4W	
IC304	8-759-999-09	IC CS5326-KP		R150	1-249-946-11	CARBON 9.1K 1% 1/4W	
IC305	8-759-916-55	IC SN74HC175AN		R151	1-249-946-11	CARBON 9.1K 1% 1/4W	
				R152	1-249-946-11	CARBON 9.1K 1% 1/4W	
IC348	8-752-335-51	IC CXD2552Q-1					
IC349	8-752-335-51	IC CXD2552Q-1		R153	1-249-946-11	CARBON 9.1K 1% 1/4W	
IC350	8-759-999-32	IC SM5813APT		R154	1-247-721-11	CARBON 4.7K 5% 1/4W	
IC351	8-759-917-18	IC SN74HCU04AN		R155	1-247-721-11	CARBON 4.7K 5% 1/4W	
IC354	8-759-900-72	IC NE5532P		R156	1-247-721-11	CARBON 4.7K 5% 1/4W	
				R157	1-247-721-11	CARBON 4.7K 5% 1/4W	
IC355	8-759-634-55	IC M5F7805L-720					
IC356	8-759-604-30	IC M5F7808L		R158	1-249-948-11	CARBON 11K 1% 1/4W	
IC357	8-759-917-11	IC SN74HC393AN		R159	1-249-948-11	CARBON 11K 1% 1/4W	
IC358	8-759-250-81	IC TC5081AP		R160	1-249-941-11	CARBON 5.6K 1% 1/4W	
IC359	8-759-233-64	IC TC74HCU04AF		R161	1-249-932-11	CARBON 2.4K 1% 1/4W	
				R162	1-246-545-00	CARBON 1.0M 5% 1/4W	
IC360	8-759-239-47	IC TC74HC123AP					
IC361	8-759-916-29	IC SN74HC74N					

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R163	1-249-941-11	CARBON	5. 6K 1% 1/4W	R303	1-249-504-11	CARBON	10 5% 1/4W
R164	1-249-941-11	CARBON	5. 6K 1% 1/4W	R325	1-247-706-11	CARBON	330 5% 1/4W
R165	1-249-941-11	CARBON	5. 6K 1% 1/4W	R326	1-247-706-11	CARBON	330 5% 1/4W
R166	1-249-932-11	CARBON	2. 4K 1% 1/4W	R327	1-247-710-11	CARBON	560 5% 1/4W
R167	1-246-545-00	CARBON	1. 0M 5% 1/4W	R328	1-247-710-11	CARBON	560 5% 1/4W
R168	1-249-556-11	CARBON	1. 5K 5% 1/4W	R329	1-249-466-11	CARBON	56K 5% 1/4W
R169	1-249-556-11	CARBON	1. 5K 5% 1/4W	R330	1-249-466-11	CARBON	56K 5% 1/4W
R170	1-249-469-11	CARBON	100K 5% 1/4W	R331	1-247-719-11	CARBON	3. 3K 5% 1/4W
R171	1-249-529-11	CARBON	110 5% 1/4W	R332	1-247-719-11	CARBON	3. 3K 5% 1/4W
R172	1-249-529-11	CARBON	110 5% 1/4W	R333	1-249-798-11	CARBON	680 5% 1/2W
R173	1-247-721-11	CARBON	4. 7K 5% 1/4W	R334	1-249-798-11	CARBON	680 5% 1/2W
R174	1-249-462-11	CARBON	22K 5% 1/4W	R335	1-247-751-11	CARBON	820 5% 1/2W
R175	1-247-700-11	CARBON	100 5% 1/4W	R336	1-247-751-11	CARBON	820 5% 1/2W
R177	1-249-497-11	CARBON	33K 5% 1/4W	R353	1-247-716-11	CARBON	1. 8K 5% 1/4W
R203	1-246-545-00	CARBON	1. 0M 5% 1/4W	R354	1-249-417-11	CARBON	1K 5% 1/4W
R204	1-247-717-11	CARBON	2. 2K 5% 1/4W	R355	1-249-417-11	CARBON	1K 5% 1/4W
R205	1-249-462-11	CARBON	22K 5% 1/4W	R356	1-249-423-11	CARBON	3. 3K 5% 1/4W
R206	1-249-469-11	CARBON	100K 5% 1/4W	R357	1-249-423-11	CARBON	3. 3K 5% 1/4W
R207	1-249-520-11	CARBON	47 5% 1/4W	R358	1-249-433-11	CARBON	22K 5% 1/4W
R208	1-249-512-11	CARBON	22 5% 1/4W	R359	1-249-435-11	CARBON	33K 5% 1/4W
R209	1-249-524-11	CARBON	68 5% 1/4W	R360	1-249-417-11	CARBON	1K 5% 1/4W
R250	1-249-946-11	CARBON	9. 1K 1% 1/4W	R361	1-247-903-00	CARBON	1M 5% 1/4W
R251	1-249-946-11	CARBON	9. 1K 1% 1/4W	R362	1-247-903-00	CARBON	1M 5% 1/4W
R252	1-249-946-11	CARBON	9. 1K 1% 1/4W	R363	1-249-429-11	CARBON	10K 5% 1/4W
R253	1-249-946-11	CARBON	9. 1K 1% 1/4W	R364	1-249-428-11	CARBON	8. 2K 5% 1/4W
R254	1-247-721-11	CARBON	4. 7K 5% 1/4W	R365	1-249-441-11	CARBON	100K 5% 1/4W
R255	1-247-721-11	CARBON	4. 7K 5% 1/4W	R366	1-249-417-11	CARBON	1K 5% 1/4W
R256	1-247-721-11	CARBON	4. 7K 5% 1/4W	R367	1-249-417-11	CARBON	1K 5% 1/4W
R257	1-247-721-11	CARBON	4. 7K 5% 1/4W	R368	1-249-417-11	CARBON	1K 5% 1/4W
R258	1-249-948-11	CARBON	11K 1% 1/4W	R369	1-247-903-00	CARBON	1M 5% 1/4W
R259	1-249-948-11	CARBON	11K 1% 1/4W	R370	1-249-417-11	CARBON	1K 5% 1/4W
R260	1-249-941-11	CARBON	5. 6K 1% 1/4W	R371	△1-212-857-00	FUSIBLE	10 5% 1/4W F
R261	1-249-932-11	CARBON	2. 4K 1% 1/4W	R372	△1-212-857-00	FUSIBLE	10 5% 1/4W F
R262	1-246-545-00	CARBON	1. 0M 5% 1/4W	R373	1-249-416-11	CARBON	820 5% 1/4W
R263	1-249-941-11	CARBON	5. 6K 1% 1/4W	R374	1-249-416-11	CARBON	820 5% 1/4W
R264	1-249-941-11	CARBON	5. 6K 1% 1/4W	R375	1-249-416-11	CARBON	820 5% 1/4W
R265	1-249-941-11	CARBON	5. 6K 1% 1/4W	R376	1-249-413-11	CARBON	470 5% 1/4W
R266	1-249-932-11	CARBON	2. 4K 1% 1/4W	R377	1-249-413-11	CARBON	470 5% 1/4W
R267	1-246-545-00	CARBON	1. 0M 5% 1/4W	R378	1-249-413-11	CARBON	470 5% 1/4W
R268	1-249-556-11	CARBON	1. 5K 5% 1/4W	R379	1-249-413-11	CARBON	470 5% 1/4W
R269	1-249-556-11	CARBON	1. 5K 5% 1/4W	R380	1-249-413-11	CARBON	470 5% 1/4W
R270	1-249-469-11	CARBON	100K 5% 1/4W	R381	1-247-887-00	CARBON	220K 5% 1/4W
R271	1-249-529-11	CARBON	110 5% 1/4W	R382	1-249-413-11	CARBON	470 5% 1/4W
R272	1-249-529-11	CARBON	110 5% 1/4W	R385	1-249-429-11	CARBON	10K 5% 1/4W
R273	1-247-721-11	CARBON	4. 7K 5% 1/4W	R386	1-249-441-11	CARBON	100K 5% 1/4W
R274	1-249-462-11	CARBON	22K 5% 1/4W	R387	1-249-413-11	CARBON	470 5% 1/4W
R275	1-247-700-11	CARBON	100 5% 1/4W	R388	1-249-425-11	CARBON	4. 7K 5% 1/4W
R277	1-249-497-11	CARBON	33K 5% 1/4W	R389	1-249-441-11	CARBON	100K 5% 1/4W
R301	1-249-460-11	CARBON	15K 5% 1/4W	R390	1-249-407-11	CARBON	150 5% 1/4W
R302	1-247-704-11	CARBON	220 5% 1/4W	R391	1-249-409-11	CARBON	220 5% 1/4W

Note: The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

AUDIO

BATTERY

CONTROL SW

Ref.No.	Part No.	Description	Remark
		< RELAY >	
RY150	1-515-727-11	RELAY	
RY250	1-515-727-11	RELAY	
RY351	1-515-727-11	RELAY	
RY352	1-515-772-11	RELAY	

	* 1-637-626-11	BATTERY BOARD	

	* A-2006-557-A	CONTROL SW BOARD, COMPLETE (AEP, UK)	
	* A-2006-536-A	CONTROL SW BOARD, COMPLETE (US)	

	9-911-839-XX	CUSHION	
	* 4-911-676-01	SPACER, LED	
		< CAPACITOR >	
C702	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C703	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C704	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C705	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C706	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C708	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C709	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C710	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C711	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C712	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C713	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C714	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C715	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C722	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C723	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C724	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C725	1-163-227-11	CERAMIC CHIP 10PF 5% 50V	
C726	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >	
CN772	* 1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P	
CN773	* 1-564-339-00	PIN, CONNECTOR 5P	
		< TRIMMER >	
CT701	1-141-334-11	CAP, VAR, TRIMMER	
		< DIODE >	
D701	8-719-304-16	DIODE SEL2510W-D	

Ref.No.	Part No.	Description	Remark
D702	8-719-918-76	DIODE GL-3PR9	
D705	8-719-934-34	DIODE AA3432S	
D706	8-719-934-34	DIODE AA3432S	
D707	8-719-304-16	DIODE SEL2510W-D	
D709	8-719-934-34	DIODE AA3432S	
D710	8-719-934-34	DIODE AA3432S	
D711	8-719-934-34	DIODE AA3432S	
D712	8-719-934-34	DIODE AA3432S	
D713	8-719-934-34	DIODE AA3432S	
D714	8-719-934-34	DIODE AA3432S	
D715	8-719-934-34	DIODE AA3432S	
D716	8-719-934-34	DIODE AA3432S	
D718	8-719-938-75	DIODE SB05-05CP-TA	
D719	8-719-938-75	DIODE SB05-05CP-TA	
D720	8-719-938-75	DIODE SB05-05CP-TA	
D721	8-719-938-75	DIODE SB05-05CP-TA	
		< INDICATOR >	
FL701	1-519-601-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC701	8-759-513-16	IC MSC62408-020GS-K	
IC702	8-752-326-33	IC CXK1011M	
IC703	8-759-009-05	IC MC14051BF	
IC704	8-759-009-05	IC MC14051BF	
IC705	8-759-009-10	IC MC14069UBF	
IC706	8-759-502-84	IC LM393M	
IC707	8-759-630-70	IC M50782FP	
IC708	8-752-323-64	IC CXK5816M-12L	
IC709	8-759-500-05	IC MSM6338MS-K	
IC712	8-759-504-23	IC RF5C62	
		< TRANSISTOR >	
Q701	8-729-901-04	TRANSISTOR DTA114EK	
Q702	8-729-901-04	TRANSISTOR DTA114EK	
Q705	8-729-901-04	TRANSISTOR DTA114EK	
Q706	8-729-901-04	TRANSISTOR DTA114EK	
Q707	8-729-901-04	TRANSISTOR DTA114EK	
Q709	8-729-901-04	TRANSISTOR DTA114EK	
Q710	8-729-901-04	TRANSISTOR DTA114EK	
Q711	8-729-901-04	TRANSISTOR DTA114EK	
Q712	8-729-901-04	TRANSISTOR DTA114EK	
Q713	8-729-901-04	TRANSISTOR DTA114EK	
Q714	8-729-901-04	TRANSISTOR DTA114EK	
Q715	8-729-901-04	TRANSISTOR DTA114EK	
Q716	8-729-901-04	TRANSISTOR DTA114EK	
Q717	8-729-901-04	TRANSISTOR DTA114EK	
Q718	8-729-807-16	TRANSISTOR 2SD1621-R	
Q719	8-729-900-98	TRANSISTOR DTC143TK	
Q720	8-729-900-98	TRANSISTOR DTC143TK	
Q721	8-729-900-98	TRANSISTOR DTC143TK	

CONTROL SW

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q722	8-729-900-98	TRANSISTOR DTC143TK		R742	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
Q723	8-729-900-98	TRANSISTOR DTC143TK		R743	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
Q724	8-729-900-98	TRANSISTOR DTC143TK		R744	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
Q725	8-729-900-98	TRANSISTOR DTC143TK		R745	1-216-045-00	METAL CHIP 680 5% 1/10W	
Q726	8-729-900-98	TRANSISTOR DTC143TK		R746	1-216-047-00	METAL CHIP 820 5% 1/10W	
Q727	8-729-807-16	TRANSISTOR 2SD1621-R		R747	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
Q728	8-729-100-66	TRANSISTOR 2SC1623-L6		R749	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
Q730	8-729-901-00	TRANSISTOR DTC124EK		R750	1-216-045-00	METAL CHIP 680 5% 1/10W	
Q732	8-729-807-16	TRANSISTOR 2SD1621-R		R751	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
< RESISTOR >				R753	1-216-063-00	METAL CHIP 3.9K 5% 1/10W (AEP, UK)	
R701	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R754	1-216-045-00	METAL CHIP 680 5% 1/10W (US)	
R702	1-216-045-00	METAL CHIP 680 5% 1/10W		R755	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R703	1-216-047-00	METAL CHIP 820 5% 1/10W		R756	1-216-045-00	METAL CHIP 680 5% 1/10W	
R704	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R757	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R705	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		R758	1-216-045-00	METAL CHIP 680 5% 1/10W	
R706	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R759	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R707	1-216-045-00	METAL CHIP 680 5% 1/10W		R760	1-216-045-00	METAL CHIP 680 5% 1/10W	
R708	1-216-047-00	METAL CHIP 820 5% 1/10W		R761	1-216-033-00	METAL CHIP 220 5% 1/10W	
R709	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R762	1-216-033-00	METAL CHIP 220 5% 1/10W	
R710	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		R765	1-216-033-00	METAL CHIP 220 5% 1/10W	
R711	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R766	1-216-033-00	METAL CHIP 220 5% 1/10W	
R712	1-216-045-00	METAL CHIP 680 5% 1/10W		R767	1-216-033-00	METAL CHIP 220 5% 1/10W	
R713	1-216-047-00	METAL CHIP 820 5% 1/10W		R769	1-216-033-00	METAL CHIP 220 5% 1/10W	
R714	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R770	1-216-033-00	METAL CHIP 220 5% 1/10W	
R715	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R771	1-216-033-00	METAL CHIP 220 5% 1/10W	
R716	1-216-045-00	METAL CHIP 680 5% 1/10W		R772	1-216-033-00	METAL CHIP 220 5% 1/10W	
R717	1-216-047-00	METAL CHIP 820 5% 1/10W		R773	1-216-033-00	METAL CHIP 220 5% 1/10W	
R718	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R774	1-216-033-00	METAL CHIP 220 5% 1/10W	
R719	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R775	1-216-033-00	METAL CHIP 220 5% 1/10W	
R720	1-216-045-00	METAL CHIP 680 5% 1/10W		R776	1-216-033-00	METAL CHIP 220 5% 1/10W	
R721	1-216-047-00	METAL CHIP 820 5% 1/10W		R777	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R722	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R778	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R723	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		R779	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R724	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R780	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R725	1-216-045-00	METAL CHIP 680 5% 1/10W		R781	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R726	1-216-047-00	METAL CHIP 820 5% 1/10W		R782	1-216-675-11	METAL CHIP 10K 0.5% 1/10W	
R727	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R783	1-216-675-11	METAL CHIP 10K 0.5% 1/10W	
R728	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		R784	1-216-675-11	METAL CHIP 10K 0.5% 1/10W	
R729	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R785	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R730	1-216-045-00	METAL CHIP 680 5% 1/10W		R786	1-216-682-11	METAL CHIP 20K 0.5% 1/10W	
R731	1-216-047-00	METAL CHIP 820 5% 1/10W		R787	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R732	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R788	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R733	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		R789	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R734	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R790	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R735	1-216-045-00	METAL CHIP 680 5% 1/10W		R791	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R736	1-216-047-00	METAL CHIP 820 5% 1/10W		R792	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R737	1-216-051-00	METAL CHIP 1.2K 5% 1/10W		R793	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R739	1-216-063-00	METAL CHIP 3.9K 5% 1/10W		R794	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R740	1-216-045-00	METAL CHIP 680 5% 1/10W		R795	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R741	1-216-047-00	METAL CHIP 820 5% 1/10W		R796	1-216-089-00	METAL CHIP 47K 5% 1/10W	

CONTROL SW

DIGITAL

Ref. No.	Part No.	Description	Remark
R797	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R800	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R801	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R802	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R803	1-216-047-00	METAL CHIP 820 5% 1/10W	
R804	1-216-047-00	METAL CHIP 820 5% 1/10W	
R805	△ 1-212-851-00	FUSIBLE 5.6 5% 1/4W F	
R806	△ 1-212-851-00	FUSIBLE 5.6 5% 1/4W F	
R809	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R810	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R811	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R813	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R814	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R815	1-216-033-00	METAL CHIP 220 5% 1/10W	
R816	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R817	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R818	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R819	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R820	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R821	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R822	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R823	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R824	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R827	1-216-047-00	METAL CHIP 820 5% 1/10W	
R829	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
(SWITCH)			
S701	1-554-596-21	SWITCH, KEY BOARD (▲ OPEN/CLOSE)	
S702	1-554-596-21	SWITCH, KEY BOARD (■)	
S704	1-554-596-21	SWITCH, KEY BOARD (▶)	
S705	1-554-596-21	SWITCH, KEY BOARD (◀◀)	
S706	1-554-596-21	SWITCH, KEY BOARD (▶▶)	
S707	1-554-596-21	SWITCH, KEY BOARD (◀◀)	
S708	1-554-596-21	SWITCH, KEY BOARD (▶▶)	
S709	1-554-596-21	SWITCH, KEY BOARD (● REC)	
S710	1-554-596-21	SWITCH, KEY BOARD (PAUSE)	
S711	1-554-596-21	SWITCH, KEY BOARD (○ REC MUTE)	
S712	1-554-596-21	SWITCH, KEY BOARD (COUNTER MODE)	
S713	1-554-596-21	SWITCH, KEY BOARD (COUNTER RESET)	
S714	1-554-596-21	SWITCH, KEY BOARD (COUNTER MEMORY)	
S715	1-554-596-21	SWITCH, KEY BOARD (DATE RECORDED)	
S716	1-554-596-21	SWITCH, KEY BOARD (DATE PRESENT)	
S717	1-554-596-21	SWITCH, KEY BOARD (SKIP PLAY)	
S718	1-554-596-21	SWITCH, KEY BOARD (FADER)	
S720	1-554-596-21	SWITCH, KEY BOARD (REPEAT)	
S722	1-554-596-21	SWITCH, KEY BOARD (MARGIN RESET)	
S723	1-554-596-21	SWITCH, KEY BOARD (1)	
S724	1-554-596-21	SWITCH, KEY BOARD (2)	
S725	1-554-596-21	SWITCH, KEY BOARD (3)	
S726	1-554-596-21	SWITCH, KEY BOARD (CLOCK SET)	
S727	1-554-596-21	SWITCH, KEY BOARD (4)	

Ref. No.	Part No.	Description	Remark
S728	1-554-596-21	SWITCH, KEY BOARD (5)	
S729	1-554-596-21	SWITCH, KEY BOARD (6)	
S730	1-554-596-21	SWITCH, KEY BOARD (MUSIC SCAN/+)	
S731	1-554-596-21	SWITCH, KEY BOARD (CLEAR)	
S732	1-554-596-21	SWITCH, KEY BOARD (7)	
S733	1-554-596-21	SWITCH, KEY BOARD (8)	
S734	1-554-596-21	SWITCH, KEY BOARD (9)	
S735	1-554-596-21	SWITCH, KEY BOARD (0/-)	
S736	1-554-596-21	SWITCH, KEY BOARD (START ID AUTO)	
S737	1-554-596-21	SWITCH, KEY BOARD (START ID WEITE)	
S738	1-554-596-21	SWITCH, KEY BOARD (SKIP ID WRITE)	
S739	1-554-596-21	SWITCH, KEY BOARD (END ID WRITE)	
S740	1-554-596-21	SWITCH, KEY BOARD (DISPLAY MODE)	
S741	1-554-596-21	SWITCH, KEY BOARD (START ID RENUMBER)	
S742	1-554-596-21	SWITCH, KEY BOARD (START ID ERASE)	
S743	1-554-596-21	SWITCH, KEY BOARD (SKIP ID ERASE)	
S744	1-554-596-21	SWITCH, KEY BOARD (END ID ERASE)	
(CRYSTAL)			
X701	1-567-775-11	VIBRATOR, CERAMIC (4.19MHZ)	
X702	1-567-098-00	CRYSTAL (32.8KHZ)	

* A-2006-587-A DIGITAL BOARD, COMPLETE			

(CONNECTOR)			
BAT501	* 1-564-336-81	PIN, CONNECTOR 2P	
(CAPACITOR)			
C502	1-126-022-11	ELECT 47uF 20% 16V	
C503	1-136-153-00	FILM 0.01uF 5% 50V	
C504	1-136-158-00	FILM 0.027uF 5% 50V	
C505	1-130-473-00	MYLAR 0.0015uF 5% 50V	
C506	1-126-022-11	ELECT 47uF 20% 10V	
C507	1-136-153-00	FILM 0.01uF 5% 50V	
C508	1-136-158-00	FILM 0.027uF 5% 50V	
C509	1-130-473-00	MYLAR 0.0015uF 5% 50V	
C510	1-126-022-11	ELECT 47uF 20% 10V	
C511	1-162-290-31	CERAMIC 470PF 10% 50V	
C512	1-130-479-00	MYLAR 0.0047uF 5% 50V	
C513	1-126-049-11	ELECT 22uF 20% 10V	
C514	1-162-290-31	CERAMIC 470PF 10% 50V	
C515	1-130-479-00	MYLAR 0.0047uF 5% 50V	
C516	1-126-049-11	ELECT 22uF 20% 10V	
C517	1-136-153-00	FILM 0.01uF 5% 50V	
C518	1-136-158-00	FILM 0.027uF 5% 50V	
C519	1-130-473-00	MYLAR 0.0015uF 5% 50V	
C520	1-136-153-00	FILM 0.01uF 5% 50V	
C521	1-130-473-00	MYLAR 0.0015uF 5% 50V	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

DIGITAL

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
C522	1-136-158-00	FILM	0.027uF	5%	50V		C583	1-164-159-11	CERAMIC	0.1uF		50V	
C523	1-126-157-11	ELECT	10uF	20%	16V		C584	1-164-159-11	CERAMIC	0.1uF		50V	
C524	1-126-022-11	ELECT	47uF	20%	16V		C585	1-126-022-11	ELECT	47uF	20%	10V	
C525	1-126-022-11	ELECT	47uF	20%	16V		C586	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C527	1-136-165-00	FILM	0.1uF	5%	50V		C587	1-126-044-11	ELECT	1uF	20%	50V	
C528	1-126-049-11	ELECT	22uF	20%	10V		C589	1-136-165-00	FILM	0.1uF	5%	50V	
C529	1-124-994-11	ELECT	100uF	20%	10V		C590	1-126-022-11	ELECT	47uF	20%	10V	
C535	1-136-165-00	FILM	0.1uF	5%	50V		C591	1-162-207-31	CERAMIC	22PF	5%	50V	
C536	1-130-475-00	MYLAR	0.0022uF	5%	50V		C592	1-136-165-00	FILM	0.1uF	5%	50V	
C537	1-136-153-00	FILM	0.01uF	5%	50V		C593	1-126-022-11	ELECT	47uF	20%	10V	
C538	1-130-475-00	MYLAR	0.0022uF	5%	50V		C595	1-164-159-11	CERAMIC	0.1uF		50V	
C539	1-136-153-00	FILM	0.01uF	5%	50V		C596	1-164-159-11	CERAMIC	0.1uF		50V	
C540	1-126-022-11	ELECT	47uF	20%	10V		C598	1-124-994-11	ELECT	100uF	20%	10V	
C542	1-164-159-11	CERAMIC	0.1uF		50V		C599	1-136-165-00	FILM	0.1uF	5%	50V	
C543	1-124-994-11	ELECT	100uF	20%	10V		C600	1-136-153-00	FILM	0.01uF	5%	50V	
C545	1-126-022-11	ELECT	47uF	20%	16V		C601	1-136-165-00	FILM	0.1uF	5%	50V	
C546	1-164-159-11	CERAMIC	0.1uF		50V		C602	1-136-165-00	FILM	0.1uF	5%	50V	
C547	1-164-159-11	CERAMIC	0.1uF		50V		C604	1-126-022-11	ELECT	47uF	20%	10V	
C548	1-124-994-11	ELECT	100uF	20%	10V		C605	1-136-165-00	FILM	0.1uF	5%	50V	
C549	1-124-994-11	ELECT	100uF	20%	10V		C606	1-126-157-11	ELECT	10uF	20%	16V	
C550	1-164-159-11	CERAMIC	0.1uF		50V		C607	1-124-994-11	ELECT	100uF	20%	10V	
C551	1-164-159-11	CERAMIC	0.1uF		50V		C608	1-164-159-11	CERAMIC	0.1uF		50V	
C552	1-136-165-00	FILM	0.1uF	5%	50V		C609	1-136-153-00	FILM	0.01uF	5%	50V	
C553	1-136-177-00	FILM	1uF	5%	50V		C610	1-136-157-00	FILM	0.022uF	5%	50V	
C554	1-164-159-11	CERAMIC	0.1uF		50V		C611	1-136-157-00	FILM	0.022uF	5%	50V	
C555	1-164-159-11	CERAMIC	0.1uF		50V		C612	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C556	1-162-211-31	CERAMIC	33PF	5%	50V		C613	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C557	1-136-165-00	FILM	0.1uF	5%	50V		C614	1-136-153-00	FILM	0.01uF	5%	50V	
C558	1-161-379-00	CERAMIC	0.01uF	20%	25V		C615	1-136-153-00	FILM	0.01uF	5%	50V	
C559	1-126-157-11	ELECT	10uF	20%	16V		C616	1-162-290-31	CERAMIC	470PF	10%	50V	
C560	1-126-022-11	ELECT	47uF	20%	10V		C617	1-161-377-00	CERAMIC	0.0047uF	30%	16V	
C561	1-164-159-11	CERAMIC	0.1uF		50V		C618	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C562	1-162-201-31	CERAMIC	12PF	5%	50V		C619	1-124-994-11	ELECT	100uF	20%	10V	
C563	1-162-201-31	CERAMIC	12PF	5%	50V		C620	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C564	1-162-294-31	CERAMIC	0.001uF	10%	50V		C622	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C565	1-136-177-00	FILM	1uF	5%	50V		C623	1-124-994-11	ELECT	100uF	20%	10V	
C566	1-124-994-11	ELECT	100uF	20%	10V		C624	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C567	1-164-159-11	CERAMIC	0.1uF		50V		C625	1-162-199-31	CERAMIC	10PF	5%	50V	
C569	1-162-201-31	CERAMIC	12PF	5%	50V		C626	1-164-159-11	CERAMIC	0.1uF		50V	
C570	1-162-201-31	CERAMIC	12PF	5%	50V		C627	1-164-159-11	CERAMIC	0.1uF		50V	
C571	1-162-294-31	CERAMIC	0.001uF	10%	50V		C628	1-136-153-00	FILM	0.01uF	5%	50V	
C572	1-162-199-31	CERAMIC	10PF	5%	50V		C629	1-164-159-11	CERAMIC	0.1uF		50V	
C573	1-162-199-31	CERAMIC	10PF	5%	50V		C630	1-124-925-11	ELECT	2.2uF	20%	100V	
C574	1-162-179-11	CERAMIC	0.1uF		50V		C631	1-136-177-00	FILM	1uF	5%	50V	
C576	1-164-159-11	CERAMIC	0.1uF		50V		C634	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C577	1-162-294-31	CERAMIC	0.001uF	10%	50V		C635	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C578	1-164-159-11	CERAMIC	0.1uF		50V		C636	1-136-165-00	FILM	0.1uF	5%	50V	
C579	1-124-994-11	ELECT	100uF	20%	10V		C637	1-136-165-00	FILM	0.1uF	5%	50V	
C580	1-164-159-11	CERAMIC	0.1uF		50V		C638	1-136-165-00	FILM	0.1uF	5%	50V	
C582	1-164-159-11	CERAMIC	0.1uF		50V		C640	1-164-159-11	CERAMIC	0.1uF		50V	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C641	1-162-294-31	CERAMIC 0.001uF 10% 50V		IC515	8-759-987-16	IC LM393P	
C642	1-136-153-00	FILM 0.01uF 5% 50V		IC516	8-759-239-47	IC TC74HC123AP	
C644	1-162-179-11	CREAMIC 0.1uF 50V		IC517	8-759-144-82	IC uPC2405HF	
				IC519	8-759-036-44	IC MC74AC74N	
		< CONNECTOR >		IC520	8-759-916-14	IC SN74HC04AN	
CN501	* 1-564-715-11	PIN, CONNECTOR (SMALL TYPE) 13P		IC521	8-759-916-12	IC SN74HC00AN	
CN502	* 1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P		IC522	8-759-135-80	IC uPC358C	
CN503	* 1-564-507-11	PLUG, CONNECTOR 4P		IC523	8-759-917-18	IC SN74HC04AN	
CN504	* 1-564-511-11	PLUG, CONNECTOR 8P		IC525	8-759-916-50	IC SN74HC157AN	
CN505	* 1-564-506-11	PLUG, CONNECTOR 3P		IC526	8-759-916-14	IC SN74HC04AN	
CN506	* 1-564-339-00	PIN, CONNECTOR 5P		IC527	8-759-916-55	IC SN74HC175AN	
CN507	* 1-564-714-11	PIN, CONNECTOR (SMALL TYPE) 12P		IC528	8-759-916-14	IC SN74HC04AN	
CN508	* 1-564-711-11	PIN, CONNECTOR (SMALL TYPE) 9P		IC529	8-759-906-24	IC SN74LS624N	
CN531	* 1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P		IC530	8-759-916-50	IC SN74HC157AN	
CN532	* 1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P		IC531	8-759-916-55	IC SN74HC175AN	
CN533	* 1-564-339-61	PIN, CONNECTOR 5P		IC532	8-759-916-50	IC SN74HC157AN	
CN535	* 1-564-338-61	PIN, CONNECTOR 4P		IC533	8-759-803-70	IC LC74HC08	
CN537	* 1-564-337-61	PIN, CONNECTOR 3P		IC534	8-759-504-22	IC TDA1543	
CN551	* 1-564-514-11	PLUG, CONNECTOR 11P		IC535	8-759-135-80	IC uPC358C	
CN552	* 1-564-514-11	PLUG, CONNECTOR 11P		IC536	8-759-135-80	IC uPC358C	
CN555	* 1-564-337-00	PIN, CONNECTOR 3P				< COIL >	
CN571	* 1-506-503-11	PIN, CONNECTOR 9P		L501	1-410-509-11	INDUCTOR 10uH	
CN572	* 1-564-339-61	PIN, CONNECTOR 5P		L502	1-410-509-11	INDUCTOR 10uH	
CN573	* 1-564-336-00	PIN, CONNECTOR 2P		L503	1-410-509-11	INDUCTOR 10uH	
CN574	* 1-564-509-11	PLUG, CONNECTOR 6P		L504	1-410-509-11	INDUCTOR 10uH	
CN591	* 1-564-508-11	PLUG, CONNECTOR 5P		L505	1-410-509-11	INDUCTOR 10uH	
CN592	* 1-564-510-11	PLUG, CONNECTOR 7P		L506	1-410-509-11	INDUCTOR 10uH	
CN593	* 1-564-339-00	PIN, CONNECTOR 5P		L507	1-410-509-11	INDUCTOR 10uH	
CN595	* 1-564-336-61	PIN, CONNECTOR 2P		L508	1-410-498-11	INDUCTOR 1.2uH	
CN596	* 1-564-336-71	PIN, CONNECTOR 2P		L509	1-410-509-11	INDUCTOR 10uH	
		< DIODE >		L511	1-410-509-11	INDUCTOR 10uH	
D501	8-719-109-72	DIODE RD3.9ES-B2		L513	1-410-953-11	INDUCTOR, SMALL TYPE	
D502	8-719-109-66	DIODE RD3.3ES-B2		L514	1-410-509-11	INDUCTOR 10uH	
D505	8-719-200-77	DIODE 10E2N		L516	* 1-410-858-11	INDUCTOR 0uH	
		< IC >				< TRANSISTOR >	
IC501	8-752-818-41	IC CXP80524-020Q		Q1	8-729-900-80	TRANSISTOR DTC114ES	
IC502	8-752-339-43	IC CXD2601AQ		Q2	8-729-900-80	TRANSISTOR DTC114ES	
IC503	8-752-339-43	IC CXD2601AQ		Q501	8-729-119-78	TRANSISTOR 2SC2785-HFE	
IC504	8-759-947-57	IC CXD1136Q		Q502	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC505	8-752-030-63	IC CXA1046M		Q503	8-729-924-90	TRANSISTOR 2SB1370-EF	
IC506	8-752-330-68	IC CXK58257M-12L		Q504	8-729-119-78	TRANSISTOR 2SC2785-HFE	
IC507	8-752-330-68	IC CXK58257M-12L		Q505	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC508	8-759-135-80	IC uPC358C		Q506	8-729-924-90	TRANSISTOR 2SB1370-EF	
IC509	8-759-135-80	IC uPC358C		Q507	8-729-900-80	TRANSISTOR DTC114ES	
IC510	8-759-135-80	IC uPC358C		Q509	8-729-900-80	TRANSISTOR DTC114ES	
IC511	8-759-135-80	IC uPC358C		Q510	8-729-801-84	TRANSISTOR 2SB1013-4	
IC512	8-759-916-20	IC SN74HC14AN		Q511	8-729-801-93	TRANSISTOR 2SD1387-3	
IC513	8-759-633-65	IC M54641L		Q512	8-729-900-80	TRANSISTOR DTC114ES	
IC514	8-759-633-65	IC M54641L		Q514	8-729-900-80	TRANSISTOR DTC114ES	

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q515	8-729-801-84	TRANSISTOR 2SB1013-4		R529	1-249-409-11	CARBON 220	5% 1/4W
Q516	8-729-801-93	TRANSISTOR 2SD1387-3		R530	1-249-409-11	CARBON 220	5% 1/4W
Q517	8-729-119-76	TRANSISTOR 2SA1175-HFE		R531	1-249-409-11	CARBON 220	5% 1/4W
Q518	8-729-924-90	TRANSISTOR 2SB1370-EF		R532	1-249-409-11	CARBON 220	5% 1/4W
Q519	8-729-900-80	TRANSISTOR DTC114ES		R533	1-249-417-11	CARBON 1K	5% 1/4W
Q520	8-729-900-80	TRANSISTOR DTC114ES		R534	1-249-441-11	CARBON 100K	5% 1/4W
Q521	8-729-119-78	TRANSISTOR 2SC2785-HFE		R535	1-249-423-11	CARBON 3.3K	5% 1/4W
Q523	8-729-119-78	TRANSISTOR 2SC2785-HFE		R536	1-249-417-11	CARBON 1K	5% 1/4W
Q524	8-729-119-78	TRANSISTOR 2SC2785-HFE		R537	1-249-429-11	CARBON 10K	5% 1/4W
Q525	8-729-119-76	TRANSISTOR 2SA1175-HFE		R538	1-249-429-11	CARBON 10K	5% 1/4W
Q526	8-729-119-78	TRANSISTOR 2SC2785-HFE		R539	1-249-419-11	CARBON 1.5K	5% 1/4W
Q527	8-729-900-80	TRANSISTOR DTC114ES		R540	1-249-407-11	CARBON 150	5% 1/4W
Q528	8-729-900-80	TRANSISTOR DTC114ES		R541	1-249-417-11	CARBON 1K	5% 1/4W
Q530	8-729-900-80	TRANSISTOR DTC114ES		R542	1-249-482-11	CARBON 4.7	5% 1/2W
Q531	8-729-900-80	TRANSISTOR DTC114ES		R543	1-249-424-11	CARBON 3.9K	5% 1/4W
Q532	8-729-900-80	TRANSISTOR DTC114ES		R549	1-249-429-11	CARBON 10K	5% 1/4W
Q533	8-729-900-80	TRANSISTOR DTC114ES		R550	1-249-417-11	CARBON 1K	5% 1/4W
Q534	8-729-119-76	TRANSISTOR 2SA1175-HFE		R551	1-249-435-11	CARBON 33K	5% 1/4W
Q535	8-729-900-80	TRANSISTOR DTC114ES		R552	1-249-435-11	CARBON 33K	5% 1/4W
< RESISTOR >				R553	1-249-423-11	CARBON 3.3K	5% 1/4W
R1	1-249-413-11	CARBON 470	5% 1/4W	R554	1-249-423-11	CARBON 3.3K	5% 1/4W
R2	1-249-429-11	CARBON 10K	5% 1/4W	R555	1-249-417-11	CARBON 1K	5% 1/4W
R501	1-249-429-11	CARBON 10K	5% 1/4W	R556	1-249-435-11	CARBON 33K	5% 1/4W
R502	1-249-429-11	CARBON 10K	5% 1/4W	R557	1-249-429-11	CARBON 10K	5% 1/4W
R503	1-249-429-11	CARBON 10K	5% 1/4W	R558	1-249-417-11	CARBON 1K	5% 1/4W
R504	1-249-429-11	CARBON 10K	5% 1/4W	R559	1-249-435-11	CARBON 33K	5% 1/4W
R505	1-249-429-11	CARBON 10K	5% 1/4W	R560	1-249-435-11	CARBON 33K	5% 1/4W
R506	1-249-429-11	CARBON 10K	5% 1/4W	R561	1-249-423-11	CARBON 3.3K	5% 1/4W
R507	1-249-441-11	CARBON 100K	5% 1/4W	R562	1-249-423-11	CARBON 3.3K	5% 1/4W
R508	1-249-429-11	CARBON 10K	5% 1/4W	R563	1-249-417-11	CARBON 1K	5% 1/4W
R509	1-249-429-11	CARBON 10K	5% 1/4W	R564	1-249-435-11	CARBON 33K	5% 1/4W
R510	1-249-417-11	CARBON 1K	5% 1/4W	R565	1-249-429-11	CARBON 10K	5% 1/4W
R511	1-249-417-11	CARBON 1K	5% 1/4W	R567	1-247-804-11	CARBON 75	5% 1/4W
R512	1-249-405-11	CARBON 100	5% 1/4W	R569	1-247-804-11	CARBON 75	5% 1/4W
R513	1-249-417-11	CARBON 1K	5% 1/4W	R570	1-249-425-11	CARBON 4.7K	5% 1/4W
R514	1-249-408-11	CARBON 180	5% 1/4W	R571	1-249-429-11	CARBON 10K	5% 1/4W
R515	1-249-441-11	CARBON 100K	5% 1/4W	R572	1-249-433-11	CARBON 22K	5% 1/4W
R516	1-249-429-11	CARBON 10K	5% 1/4W	R573	1-249-425-11	CARBON 4.7K	5% 1/4W
R517	1-249-417-11	CARBON 1K	5% 1/4W	R574	1-249-425-11	CARBON 4.7K	5% 1/4W
R518	1-249-429-11	CARBON 10K	5% 1/4W	R575	1-249-429-11	CARBON 10K	5% 1/4W
R519	1-249-417-11	CARBON 1K	5% 1/4W	R576	1-249-433-11	CARBON 22K	5% 1/4W
R520	1-249-405-11	CARBON 100	5% 1/4W	R577	1-249-425-11	CARBON 4.7K	5% 1/4W
R521	1-249-417-11	CARBON 1K	5% 1/4W	R578	1-249-433-11	CARBON 22K	5% 1/4W
R522	1-249-408-11	CARBON 180	5% 1/4W	R580	1-249-433-11	CARBON 22K	5% 1/4W
R523	1-249-429-11	CARBON 10K	5% 1/4W	R581	1-249-433-11	CARBON 22K	5% 1/4W
R524	1-249-429-11	CARBON 10K	5% 1/4W	R582	1-249-433-11	CARBON 22K	5% 1/4W
R525	1-249-429-11	CARBON 10K	5% 1/4W	R583	1-249-433-11	CARBON 22K	5% 1/4W
R526	1-249-429-11	CARBON 10K	5% 1/4W	R584	1-249-425-11	CARBON 4.7K	5% 1/4W
R527	1-249-429-11	CARBON 10K	5% 1/4W	R585	1-249-425-11	CARBON 4.7K	5% 1/4W
R528	1-249-429-11	CARBON 10K	5% 1/4W	R586	1-249-425-11	CARBON 4.7K	5% 1/4W

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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R587	1-249-417-11	CARBON	1K	5%	1/4W	R643	1-249-435-11	CARBON	33K	5%	1/4W
R588	1-249-417-11	CARBON	1K	5%	1/4W	R644	1-249-417-11	CARBON	1K	5%	1/4W
R589	1-249-425-11	CARBON	4. 7K	5%	1/4W	R645	1-249-437-11	CARBON	47K	5%	1/4W
R590	1-249-425-11	CARBON	4. 7K	5%	1/4W	R646	1-249-411-11	CARBON	330	5%	1/4W
R591	1-249-425-11	CARBON	4. 7K	5%	1/4W	R647	1-249-437-11	CARBON	47K	5%	1/4W
R592	1-249-425-11	CARBON	4. 7K	5%	1/4W	R648	1-249-439-11	CARBON	68K	5%	1/4W
R594	1-249-425-11	CARBON	4. 7K	5%	1/4W	R649	1-249-405-11	CARBON	100	5%	1/4W
R595	1-249-433-11	CARBON	22K	5%	1/4W	R650	1-249-417-11	CARBON	1K	5%	1/4W
R597	1-249-425-11	CARBON	4. 7K	5%	1/4W	R651	1-249-401-11	CARBON	47	5%	1/4W
R598	1-249-433-11	CARBON	22K	5%	1/4W	R652	1-249-401-11	CARBON	47	5%	1/4W
R599	1-249-429-11	CARBON	10K	5%	1/4W	R656	1-249-417-11	CARBON	1K	5%	1/4W
R600	1-249-409-11	CARBON	220	5%	1/4W	R657	1-249-401-11	CARBON	47	5%	1/4W
R601	1-249-409-11	CARBON	220	5%	1/4W	R658	1-249-417-11	CARBON	1K	5%	1/4W
R602	1-249-413-11	CARBON	470	5%	1/4W	R659	1-249-413-11	CARBON	470	5%	1/4W
R603	1-249-413-11	CARBON	470	5%	1/4W	R660	1-249-413-11	CARBON	470	5%	1/4W
R604	1-249-409-11	CARBON	220	5%	1/4W	R661	1-249-393-11	CARBON	10	5%	1/4W
R605	1-249-413-11	CARBON	470	5%	1/4W	R663	1-249-433-11	CARBON	22K	5%	1/4W
R606	1-249-417-11	CARBON	1K	5%	1/4W	R664	1-249-425-11	CARBON	4. 7K	5%	1/4W
R609	1-249-425-11	CARBON	4. 7K	5%	1/4W	R665	1-249-441-11	CARBON	100K	5%	1/4W
R610	1-249-437-11	CARBON	47K	5%	1/4W	R666	1-249-425-11	CARBON	4. 7K	5%	1/4W
R611	1-249-421-11	CARBON	2. 2K	5%	1/4W	R667	1-249-441-11	CARBON	100K	5%	1/4W
R612	1-249-417-11	CARBON	1K	5%	1/4W	R668	1-249-433-11	CARBON	22K	5%	1/4W
R614	1-249-435-11	CARBON	33K	5%	1/4W	R669	1-249-441-11	CARBON	100K	5%	1/4W
R615	1-249-429-11	CARBON	10K	5%	1/4W	R670	1-249-429-11	CARBON	10K	5%	1/4W
R616	1-249-421-11	CARBON	2. 2K	5%	1/4W	R672	1-249-407-11	CARBON	150	5%	1/4W
R617	1-249-429-11	CARBON	10K	5%	1/4W	R673	1-247-891-00	CARBON	330K	5%	1/4W
R618	1-249-421-11	CARBON	2. 2K	5%	1/4W	R674	1-249-417-11	CARBON	1K	5%	1/4W
R619	1-249-401-11	CARBON	47	5%	1/4W	R675	1-249-429-11	CARBON	10K	5%	1/4W
R620	1-249-409-11	CARBON	220	5%	1/4W	R676	1-249-441-11	CARBON	100K	5%	1/4W
R621	1-249-409-11	CARBON	220	5%	1/4W	R680	1-249-410-11	CARBON	270	5%	1/4W
R622	1-249-401-11	CARBON	47	5%	1/4W	R681	1-249-405-11	CARBON	100	5%	1/4W
R623	1-249-409-11	CARBON	220	5%	1/4W	< VARIABLE RESISTOR >					
R624	1-249-409-11	CARBON	220	5%	1/4W	RV501	1-238-019-11	RES, ADJ, CARBON	47K		
R625	1-247-899-11	CARBON	680K	5%	1/4W	RV502	1-238-019-11	RES, ADJ, CARBON	47K		
R627	1-249-425-11	CARBON	4. 7K	5%	1/4W	RV503	1-238-016-11	RES, ADJ, CARBON	10K		
R628	1-249-417-11	CARBON	1K	5%	1/4W	RV504	1-238-016-11	RES, ADJ, CARBON	10K		
R629	1-249-433-11	CARBON	22K	5%	1/4W	RV505	1-238-015-11	RES, ADJ, CARBON	4. 7K		
R630	1-249-425-11	CARBON	4. 7K	5%	1/4W	RV506	1-238-015-11	RES, ADJ, CARBON	4. 7K		
R631	1-249-415-11	CARBON	680	5%	1/4W	< RELAY >					
R632	1-249-439-11	CARBON	68K	5%	1/4W	RY518	1-515-640-11	RELAY (5V)			
R633	1-249-425-11	CARBON	4. 7K	5%	1/4W	< CRYSTAL >					
R634	1-249-440-11	CARBON	82K	5%	1/4W	X501	1-567-816-11	VIBRATOR, CRYSTAL	(18. 8MHZ)		
R635	1-249-427-11	CARBON	6. 8K	5%	1/4W	X502	1-567-815-11	VIBRATOR, CRYSTAL	(22. 6MHZ)		
R636	1-249-440-11	CARBON	82K	5%	1/4W	X503	1-578-667-11	VIBRATOR, CRYSTAL	(49. 1MHZ)		
R637	1-249-425-11	CARBON	4. 7K	5%	1/4W	*****					
R638	1-249-429-11	CARBON	10K	5%	1/4W						
R639	1-249-417-11	CARBON	1K	5%	1/4W						
R640	1-249-417-11	CARBON	1K	5%	1/4W						
R641	1-249-424-11	CARBON	3. 9K	5%	1/4W						
R642	1-249-435-11	CARBON	33K	5%	1/4W						

DIGITAL I/O (OPT)

DIGITAL IN (COAX)

DIGITAL OUT (COAX)

DIODE

HEADPHONE JACK

HEADPHONE VOL

LINE FILTER

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
* 1-637-618-11 DIGITAL I/O (OPT) BOARD *****				* 1-637-625-11 DIODE BOARD *****			
< CAPACITOR >				< DIODE >			
C677	1-162-179-11	CERAMIC 0.1uF	50V				
C678	1-126-023-11	ELECT 100uF	20% 16V	D901	8-719-302-38	DIODE RBV-602-01	
C679	1-162-179-11	CERAMIC 0.1uF	50V	*****			
< IC >				* 1-637-614-11 HEADPHONE JACK BOARD *****			
CP671	8-749-921-11	IC GP1F32R (OPTICAL IN)		< CAPACITOR >			
CP672	8-749-921-12	IC GP1F32T (OPTICAL OUT)		C720	1-162-290-31	CERAMIC 470PF	10% 50V
< COIL >				C721	1-162-290-31	CERAMIC 470PF	10% 50V
L510	1-410-509-11	INDUCTOR 10uH		< JACK >			
L512	1-410-509-11	INDUCTOR 10uH		J721	1-565-327-11	JACK, LARGE TYPE 1P (PHONES)	
*****				*****			
* 1-637-616-11 DIGITAL IN (COAX) BOARD *****				* 1-637-613-11 HEADPHONE VOL BOARD *****			
< CAPACITOR >				< VARIABLE RESISTOR >			
	1-126-059-11	ELECT 10MF	20% 50V	RV302	1-238-841-11	RES, VAR, CARBON 20K/20K (PHONE LEVEL)	
< JACK >				*****			
J601	1-563-079-11	JACK, PIN 1P (DIGITAL IN)		* 1-637-621-11 LINE FILTER BOARD *****			
< RESISTOR >				* 1-533-213-31 HOLDER, FUSE 4-870-539-00 PLATE, GROUND			
R608	1-247-804-11	CARBON 75 5% 1/4W		< CAPACITOR >			
*****				C941	△1-161-744-00	CERAMIC 0.01uF	400V
* 1-637-617-11 DIGITAL OUT (COAX) BOARD *****				C942	△1-161-742-00	CERAMIC 0.0022uF	20% 400V
* 4-916-318-01 PLATE, GROUND				C943	△1-161-742-00	CERAMIC 0.0022uF	20% 400V
< CAPACITOR >				C944	△1-161-742-00	CERAMIC 0.0022uF	20% 400V
C182	1-162-179-11	CERAMIC 0.1uF	50V	C945	△1-161-742-00	CERAMIC 0.0022uF	20% 400V
< JACK >				C946	△1-161-744-00	CERAMIC 0.01uF	400V
< RESISTOR >				< CONNECTOR >			
J181	1-566-922-21	JACK, PIN 1P (DIGITAL OUT)		CN941	* 1-564-321-00	PIN, CONNECTOR 2P	
< COIL >				CN942	* 1-565-395-11	PIN, CONNECTOR 3P	
R183	1-247-804-11	CARBON 75 5% 1/4W		CN943	* 1-564-687-11	PIN, CONNECTOR 3P	
< COIL >				CN944	* 1-564-687-11	PIN, CONNECTOR 3P	
T182	1-459-795-11	COIL (WITH CORE)		< COIL >			
*****				T901	△1-421-915-11	COIL, LINE FILTER	

LINE PIN JACK

LOAD-MOT

LOAD-SW

MD

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*****				C005	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
	* 1-637-620-11	LINE PIN JACK BOARD		C006	1-124-126-00	ELECT	47uF 20% 10V
		*****		C007	1-124-126-00	ELECT	47uF 20% 10V
		< CONNECTOR >		C021	1-124-925-11	ELECT	2.2uF 20% 100V
CN151	* 1-564-519-11	PLUG, CONNECTOR 4P		C022	1-124-126-00	ELECT	47uF 20% 10V
		< JACK >		C031	1-124-126-00	ELECT	47uF 20% 10V
J151	1-568-101-11	JACK, PIN 4P (LINE IN/OUT)		C032	1-124-126-00	ELECT	47uF 20% 10V
		< RESISTOR >		C033	1-124-126-00	ELECT	47uF 20% 10V
R153	1-249-657-11	CARBON 220 5% 1/2W		< CONNECTOR >			
R154	1-249-657-11	CARBON 220 5% 1/2W		CN003	* 1-564-505-11	PLUG, CONNECTOR 2P	
*****				CN004	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
	* 1-637-601-11	LOAD-MOT BOARD		CN005	* 1-564-515-11	PLUG, CONNECTOR 12P	
		*****		CN006	* 1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P	
		< CAPACITOR >		CN007	* 1-568-369-11	HOUSING, CONNECTOR (PC BOARD) 8P	
C011	1-163-038-00	CERAMIC CHIP 0.1uF 25V		CN008	* 1-564-338-00	PIN, CONNECTOR 4P	
		< CONNECTOR >		CN009	* 1-564-338-61	PIN, CONNECTOR 4P	
CN001	* 1-564-497-11	PIN, CONNECTOR 4P		CN051	* 1-564-715-11	PIN, CONNECTOR (SMALL TYPE) 13P	
CN002	* 1-564-496-11	PIN, CONNECTOR 3P		CN052	* 1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P	
CN054	* 1-564-523-11	PLUG, CONNECTOR 8P		CN053	* 1-564-507-11	PLUG, CONNECTOR 4P	
*****				< DIODE >			
	* 1-637-606-11	LOAD-SW BOARD		D011	8-719-104-34	DIODE 1S2836	
		*****		D012	8-719-104-34	DIODE 1S2836	
		< SWITCH >		< IC >			
S011	1-571-489-11	SWITCH, SLIDE		IC001	8-759-107-68	IC CX20115A	
S012	1-571-489-11	SWITCH, SLIDE		IC002	8-759-502-80	IC LM358M	
*****				< TRANSISTOR >			
	* A-2006-382-A	MD BOARD, COMPLETE		Q001	8-729-100-66	TRANSISTOR 2SC1623L6	
		*****		Q002	8-729-101-07	TRANSISTOR 2SB798-DL	
		< JUMPER >		Q003	8-729-900-53	TRANSISTOR DTC114EK	
4-352-844-01	PIN, LEAD, COATING			< RESISTOR >			
JW1-JW41	1-216-296-00	METAL CHIP 0 5% 1/8W		R001	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< CAPACITOR >		R002	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C001	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		R003	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C002	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		R004	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C003	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		R005	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C004	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		R006	1-216-058-00	METAL GLAZE 2.4K 5% 1/10W	
				R007	1-216-029-00	METAL CHIP 150 5% 1/10W	
				R008	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
				R009	1-216-025-00	METAL CHIP 100 5% 1/10W	
				R010	1-216-084-00	METAL GLAZE 30K 5% 1/10W	
				R011	1-216-049-00	METAL CHIP 1K 5% 1/10W	
				R012	1-216-075-00	METAL CHIP 12K 5% 1/10W	
				R013	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
				R014	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
				R015	1-216-073-00	METAL CHIP 10K 5% 1/10W	
				R022	1-216-073-00	METAL CHIP 10K 5% 1/10W	

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

MD

MOTOR

T-END

OPTICAL RECEIVE

POWER

Ref. No.	Part No.	Description	Remark
R023	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R024	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R025	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R031	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R032	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R033	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R034	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R035	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R036	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R037	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R038	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	

* 1-633-726-11 MOTOR BOARD

< CAPACITOR >

C01 1-162-851-11 CERAMIC 0.1MF 16V

< CONNECTOR >

CN01 * 1-564-336-00 PIN, CONNECTOR 2P
CN02 * 1-564-336-61 PIN, CONNECTOR 2P
CN03 * 1-564-498-11 PIN, CONNECTOR 5P

* 1-637-603-11 T-END BOARD

< TRANSISTOR >

Q011 1-808-957-11 TRANSISTOR PHOTO SENSOR

* 1-637-609-11 OPTICAL RECEIVE BOARD

< CAPACITOR >

C718 1-124-779-00 ELECT CHIP 10uF 20% 16V

< IC >

IC711 8-749-920-59 IC A1QH3020S

* A-2006-344-A POWER BOARD, COMPLETE

* 1-533-213-31 HOLDER, FUSE
* 1-568-130-11 BAR, BUS 3P

Ref. No.	Part No.	Description	Remark
< CAPACITOR >			
C901	1-126-016-11	ELECT 4700uF 20% 16V	
C902	1-126-016-11	ELECT 4700uF 20% 16V	
C903	1-124-999-11	ELECT 2200uF 20% 10V	
C904	1-124-994-11	ELECT 100uF 20% 10V	
C905	1-124-473-11	ELECT 1000uF 20% 10V	
C906	1-124-473-11	ELECT 1000uF 20% 10V	
C907	1-126-059-11	ELECT 10uF 20% 50V	
C908	1-126-016-11	ELECT 4700uF 20% 16V	
C909	1-126-016-11	ELECT 4700uF 20% 16V	
C910	1-124-473-11	ELECT 1000uF 20% 10V	
C911	1-126-066-11	ELECT 470uF 20% 63V	
C912	1-126-052-11	ELECT 100uF 20% 50V	
C913	1-126-052-11	ELECT 100uF 20% 50V	
C914	1-136-165-00	FILM 0.1uF 5% 50V	
C915	1-136-165-00	FILM 0.1uF 5% 50V	
C991	1-126-129-11	ELECT 6800uF 20% 35V	
C992	1-126-129-11	ELECT 6800uF 20% 35V	
C993	1-136-165-00	FILM 0.1uF 5% 50V	
C994	1-136-177-00	FILM 1uF 5% 50V	
C995	1-136-165-00	FILM 0.1uF 5% 50V	
C996	1-136-177-00	FILM 1uF 5% 50V	
< CONNECTOR >			
CN901	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN902	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN903	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN904	* 1-564-507-11	PLUG, CONNECTOR 4P	
CN991	* 1-560-061-00	PIN, CONNECTOR 3P	
CN992	* 1-560-062-00	PIN, CONNECTOR 4P	
CN993	* 1-560-063-00	PIN, CONNECTOR 5P	
CN994	* 1-560-061-00	PIN, CONNECTOR 3P	
< DIODE >			
D903	8-719-200-77	DIODE 10E2N	
D904	8-719-200-77	DIODE 10E2N	
D905	8-719-107-94	DIODE 1SS202-1	
D906	8-719-107-94	DIODE 1SS202-1	
D907	8-719-107-94	DIODE 1SS202-1	
D908	8-719-230-02	DIODE 30DF2	
D909	8-719-230-02	DIODE 30DF2	
D910	8-719-200-77	DIODE 10E2N	
D991	8-719-210-30	DIODE F10P20F(R)	
D992	8-719-210-38	DIODE F10P20FR	
< RESISTOR >			
FR901	△1-219-137-11	FUSIBLE 0.33 10% 1/4W	
FR902	△1-212-849-00	FUSIBLE 4.7 5% 1/4W F	
FR904	△1-212-865-00	FUSIBLE 22 5% 1/4W F	
FR905	△1-212-865-00	FUSIBLE 22 5% 1/4W F	

POWER

PUSH SW

REC VOL

S-END

S-SW

SLIDE-SW

SW (IN)

SW (OUT)

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q901	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q902	8-729-111-55	TRANSISTOR 2SD1312-K	
< RESISTOR >			
R901	1-249-425-11	CARBON 4.7K 5% 1/4W	
R902	1-249-417-11	CARBON 1K 5% 1/4W	
R903	1-249-425-11	CARBON 4.7K 5% 1/4W	
R904	1-249-437-11	CARBON 47K 5% 1/4W	
R905	1-247-887-00	CARBON 220K 5% 1/4W	
R907	1-249-409-11	CARBON 220 5% 1/4W	
< THERMISTOR >			
TH903	1-806-882-11	THERMISTOR (POSITIVE)	
THP901	1-808-065-11	THERMISTOR, POSITIVE	
THP902	1-808-065-11	THERMISTOR, POSITIVE	
< ZENER DIODE >			
ZD901	8-719-914-12	DIODE HZ4BLL	
ZD902	8-719-934-25	DIODE HZS33-1LT2	
ZD903	8-719-933-33	DIODE HZS6A1LT2	

* 1-637-610-11 PUSH SW BOARD			

< CONNECTOR >			
CN778	* 1-564-337-00	PIN, CONNECTOR 3P	
< SWITCH >			
S747	1-554-118-00	SWITCH, PUSH (1 KEY) (REC MODE)	
S750	1-554-118-00	SWITCH, PUSH (1 KEY) (REC MONITOR)	

* 1-637-615-11 REC VOL BOARD			

	1-136-165-00	FILM 0.1MF 5% 50V	
< RESISTOR >			
R101	1-249-459-11	CARBON 12K 5% 1/4W	
R102	1-249-461-11	CARBON 18K 5% 1/4W	
R201	1-249-459-11	CARBON 12K 5% 1/4W	
R202	1-249-461-11	CARBON 18K 5% 1/4W	
< VARIABLE RESISTOR >			
RV301	1-241-360-11	RES, VAR, CARBON 50K/50K (REC LEVEL)	

Ref. No.	Part No.	Description	Remark
* 1-637-602-11 S-END BOARD			

< CONNECTOR >			
CN055	* 1-564-518-11	PLUG, CONNECTOR 3P	
< TRANSISTOR >			
Q012	1-808-957-11	TRANSISTOR PHOTO SENSOR	

* 1-637-604-11 S-SW BOARD			

< SWITCH >			
S014	1-572-458-11	SWITCH, PUSH	

* 1-637-608-11 SLIDE SW BOARD			

< RESISTOR >			
R807	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R808	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
< SWITCH >			
S746	1-516-781-XX	SWITCH, SLIDE (INPUT MODE)	
S749	1-516-781-XX	SWITCH, SLIDE (TIMER)	

* 1-633-727-11 SW (IN) BOARD			

< SWITCH >			
S11	1-572-247-11	SWITCH, SLIDE	

* 1-633-728-11 SW (OUT) BOARD			

< SWITCH >			
S12	1-570-975-11	SWITCH, SLIDE	

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

T-SW

TRANSISTOR (A)

TRANSISTOR (B)

TRANSISTOR (C)

Ref. No.	Part No.	Description	Remark
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	* 1-637-605-11	T-SW BOARD *****	
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		< SWITCH >	
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S015	1-572-459-11	SWITCH, PUSH	
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	* 1-637-622-11	TRANSISTOR (A) BOARD *****	
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		< CAPACITOR >	
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C931	9-831-246-50	WIRE KIT	1uF 10% 50V
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		< TRANSISTOR >	
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Q931	8-729-111-55	TRANSISTOR 2SD1312-K	
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	* 1-637-623-11	TRANSISTOR (B) BOARD *****	
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		< CAPACITOR >	
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C932	1-164-159-11	CERAMIC	0.1uF 50V
C933	1-164-159-11	CERAMIC	0.1uF 50V

		< IC >	
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IC901	8-759-148-79	IC uPC2406HF	
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	* 1-637-624-11	TRANSISTOR (C) BOARD *****	
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		< CAPACITOR >	
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C934	1-164-159-11	CERAMIC	0.1uF 50V
C935	1-164-159-11	CERAMIC	0.1uF 50V

		< IC >	
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IC902	8-759-144-82	IC uPC2405HF	
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		MISCELLANEOUS *****	
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111	△1-559-479-11	CORD, POWER (US)	
	△1-575-912-11	CORD, POWER (AEP)	
	△1-575-913-11	CORD, POWER (UK)	
BATT01	1-528-229-11	BATTERY, LITHIUCR-2450	
FH901	1-532-745-11	FUSE, GLASS TUBE (3.15A 125V) (US)	
	△1-532-237-00	FUSE, TIME-LAG (T3.15A 250V) (AEP, UK)	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
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FH902	△1-532-203-00	FUSE, TIME-LAG (T2A 250V) (AEP, UK)	
	△1-532-743-11	FUSE, GLASS TUBE (2A, 125V) (US)	
FH903	△1-532-203-00	FUSE, TIME-LAG (T2A 125V) (AEP, UK)	
	△1-532-743-11	FUSE, GLASS TUBE (2A, 250V) (US)	
FH941	△1-532-743-11	FUSE, GLASS TUBE (2A, 125V) (US)	
	△1-532-203-00	FUSE, TIME-LAG (T2A 250V) (AEP, UK)	

M902	8-835-306-01	MOTOR, DC U-17A	
M905	* 8-835-205-01	MOTOR, DC U-2A	
MOTO11	A-2003-660-A	MOTOR ASSY	
MOTO12	A-2003-448-A	MOTOR ASSY	

PL701	1-518-664-11	LAMP, PILOT	
PL702	1-518-664-11	LAMP, PILOT	
PM002	1-454-522-11	SOLENOID, PLUNGER	

PT901	△1-450-450-11	TRANSFORMER, POWER (D) (US)	
	△1-450-603-11	TRANSFORMER, POWER (AEP, UK)	
PT902	△1-450-449-11	TRANSFORMER, POWER (A) (US)	
	△1-450-604-11	TRANSFORMER, POWER (A) (AEP, UK)	
S901	△1-554-920-11	SWITCH, PUSH (AC POWER) (1 KEY)	

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		ACCESSORY & PACKING MATERIAL *****	
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	1-465-642-11	REMOTE COMMANDER (RM-D77A)... (BLACK)	
	1-465-823-11	REMOTE COMMANDER (RM-D77A/D)... (GOLD)	
	1-590-861-11	CORD, CONNECTION	
	* 3-369-153-01	INDIVIDUAL CARTON (87ES)	
	* 3-370-205-01	INDIVIDUAL CARTON (77ES)	
	3-703-450-01	INSTRUCTION (87ES)	
	3-704-366-01	SCREW (CASE) (M3X8) (BLACK) (US, AEP)	
	3-704-366-11	SCREW (CASE) (M3X8) (GOLD)	
	3-707-584-01	COVER, BATTERY (for RM-D77A, RM-D77A/D)	
	3-752-666-11	MANUAL, INSTRUCTION (AEP, UK) (ENGLISH, FRENCH, SPANISH, PORTUGUESE)	
	3-752-666-21	MANUAL, INSTRUCTION (US) (ENGLISH)	
	3-752-666-41	MANUAL, INSTRUCTION (AEP) (GERMAN, DUTCH, SWEDISH, ITALIAN)	
	* 4-936-624-01	CUSHION	

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HARDWARE LIST

#2	7-682-548-09	SCREW +BVT 3X8 (S)	
#3	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#4	7-621-773-86	SCREW +B 2.6X4	
#5	7-682-560-04	SCREW +BVT 4X6 (S)	
#6	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#7	7-682-548-04	SCREW, TIGHT, S	
#8	7-621-771-06	SCREW, LOCK	
#9	7-682-147-15	SCREW, TR	
#10	7-621-772-10	SCREW +B 2X4	
#11	7-688-001-01	W 2, SMALL	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
#12	7-682-545-09	SCREW +B 3X4	
#13	7-621-772-00	SCREW +B 2X3	
#14	7-688-001-12	W 2, MIDDLE	
#15	7-621-775-08	SCREW +B 2.6X3	
#16	7-621-255-45	SCREW +P 2X6	
#17	7-627-852-28	+P 1.7X3	
#18	7-621-772-08	SCREW +B 2X3	
#19	7-628-253-00	SCREW +PS 2X4	
#20	7-627-553-27	SCREW, PRECISION +P 2X2.5	
#21	7-627-553-67	SCREW, PRECISION +P 2X5	
#22	7-621-772-20	SCREW +B 2X5	
#23	7-627-450-78	SCREW, PRECISION +K 1.7X4	
#24	7-627-552-47	SCREW, PRECISION +P 1.7X4	
#25	7-621-759-35	+PSW, 2.6X5	

Note: The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

DTC-77ES/87ES

SONY SERVICE MANUAL



US Model
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AEP Model
UK Model
DTC-77ES

CORRECTION-1

Correct your service manual as shown below.

 : indicates corrected portion.

Page	INCORRECT				CORRECT			
70	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
	21	3-704-366-11	SCREW (CASE) (M3X8)(GOLD)		21	4-924-242-01  4-924-242-01	SCREW (M3X6)  FLAT HEAD.....(GOLD)	

DTC-77ES/87ES

SONY[®] SERVICE MANUAL

US Model
DTC-87ES

AEP Model
UK Model
DTC-77ES

CORRECTION-2

Correct your service manual as shown below.

____ (Under line) : indicates corrected portion.

Page	INCORRECT			CORRECT		
	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
76	312	3-701-437-01	SHEET (CATCHER)	312	<u>3-364-033-01</u>	SHEET (CATCHER)

(SPM-95058)